



Bibliometric Analysis of Social Media Marketing in Hospitals: Trends and Influences

Febby Rosidayani ^{1*}, Qurratul Aini ²

Abstract

Background: Hospitals are increasingly serving international clients, employing diverse international staff, and leveraging cutting-edge technology and expertise (Aini, 2018). In this context, social media has become crucial, enabling the sharing of user-generated content and social networking (Aboalshamat et al., 2019). As a convenient, rapid, and disruptive method of information exchange, social media has transformed marketing into the fastest-growing form of advertising. **Methods:** This study employed a quantitative descriptive method (Zupic & Čater, 2015) and conducted a bibliometric analysis using Scopus data (Cui et al., 2018; Yu et al., 2020; Luo et al., 2022). The Scopus search focused on the keywords "hospital," "social," "media," and "marketing" for publications from 2013 to 2023, specifically targeting fields like medicine, health professions, nursing, pharmacology, biochemistry, immunology, microbiology, and dentistry. Data was collected on March 30, 2024, and analyzed using VOSviewer software for co-reference network analysis, citation analysis, author cooperation analysis, and keyword co-occurrence analysis. **Results:** The study identified 72 documents on hospital social media marketing from Scopus. The annual publication trends

peaked in 2019, with the Journal of Medical Internet Research and Health Marketing Quarterly being the top journals. Ford, E.W., and Huerta, T.R. were the most productive researchers, and The Ohio State University College of Medicine was the leading institution. The United States led in publication volume, followed by India and Australia. The keyword analysis revealed "survey" as the most frequent term, forming four distinct clusters in the research network visualization. **Conclusion:** This study highlights the significant growth in hospital social media marketing research, emphasizing the United States' leading role and the increasing importance of social media as a marketing tool in healthcare. The bibliometric analysis provides a foundation for future research, offering insights into emerging trends and potential areas for further exploration in social media marketing for hospitals.

Keywords: Social media marketing, Hospital marketing, Bibliometric analysis, Healthcare communication, VOSviewer

1. Introduction

Today, hospitals are evolving to serve an increasingly international clientele, employing a diverse international staff and leveraging cutting-edge technology and expertise to provide top-tier services (Aini, 2018, Md Halimuzzaman et al. 2024, Zulfa et al. 2024, Qurratul Aini et al. 2024, Aini et al. 2024, Faris et al. 2024). In this context, social media has become a pivotal tool, referring to digital platforms that enable the sharing of user-generated content and participation in social networking (Aboalshamat et al., 2019). As the most convenient, rapid, and disruptive method of information exchange, social media has permeated numerous aspects of life,

Significance | This study provided insights into social media's impact on hospital marketing, highlighting key trends, influential authors, and future research opportunities.

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notably transforming marketing into the fastest-growing form of advertising. Social media marketing has emerged as an essential strategy that businesses and brands can no longer afford to ignore (Pang et al., 2020). It involves the strategic use of various digital platforms—such as blogging, micro-blogging, social networking, social bookmarking, and content sharing—to generate interest, recognition, recall, and interaction with brands, businesses, products, or individuals (Genelius, 2011). For hospitals, social media offers a new channel to engage with the public, improve organizational and individual medical personnel's images, expand reach, and adapt to changing consumer demands for healthcare services (Wong et al., 2016; Kotsenas et al., 2018).

Social media platforms are cost-effective marketing tools that facilitate network establishment and rapid information dissemination, thereby fostering public trust and confidence. These platforms support various content formats, including text, photos, audio, and video (Gupta et al., 2013). Healthcare organizations are increasingly sophisticated in their use of social media and internet-based tools to promote their services (Ford et al., 2013).

In Indonesia, social media usage is particularly prevalent, with 78.19 percent of its 278.6 million population connected to the internet in 2023. Social media is the most favored activity among Indonesian internet users, placing the country among the top 10 globally in social media usage. Consequently, social media has become an appropriate medium for promoting products and services to consumers (Richter & Kazley, 2020; Elhajjar & Ouaida, 2022). Social media also helps brands create identities and communicate messages in a relatable and engaging manner (Salmiah, 2020). Among social media platforms, YouTube is the most popular in Indonesia, followed by WhatsApp, Instagram, and Facebook (Masyitoh et al., 2021; Pabalkar et al., 2019).

The rapid expansion of research in social media marketing is a testament to its growing significance. The increasing number of scholarly articles in this field highlights its immense popularity (Dafitri et al., 2023). This research seeks to explore the development of social marketing research from 2013 to 2023, identify leading journals and authors in hospital social marketing research, analyze the distribution of scientific publications by affiliation and institution, examine the distribution by country and subject, and conduct author collaboration and keyword analyses.

2. Materials and Methods

2.1 Research Design

This study employed a quantitative descriptive method (Zupic & Čater, 2015). A bibliometric analysis was also conducted, highlighting that empirical research papers using advanced quantitative methodologies tend to have multiple authors (Jordan et al., 2017).

2.2 Data Collection

Data was collected from the Scopus database (<https://www.scopus.com/>), a comprehensive international resource containing peer-reviewed journals. Scopus is widely used in bibliometric analyses within social sciences (Cui et al., 2018; Yu et al., 2020; Luo et al., 2022).

2.3 Search Strategy

The Scopus search was conducted using the keywords "hospital," "social," "media," and "marketing," focusing on publications from 2013 to 2023. Only documents in English and at the final stage of production were included. The study targeted specific fields: medicine, health professions, nursing, pharmacology, biochemistry, immunology, microbiology, and dentistry, excluding unrelated subjects. Data collection was finalized on March 30, 2024, to avoid bias from database updates.

2.4 Data Processing

Data was converted into the RIS file format to facilitate research map dissemination. The bibliometric leadership map was established through two analyses: examination of Scopus search results and analysis using VOSviewer software (Goyal et al., 2021; Herlina, 2022; Sudirjo et al., 2023).

2.5 Scopus Analysis

Scopus search results were descriptively analyzed based on: Publication year, Publishing institution, Publication country, Publication title, Research topic, and VOSviewer Analysis. VOSviewer was utilized to create a bibliometric map of research development in hospitals and social media marketing. It helped identify the most dominant keywords in hospital social media marketing. The context was derived from the author's titles and keywords.

2.6 Query Formulation

The following query was used to narrow down the search: vbnet code:

```
Title-Abs-Key (Hospital And Social And Media And Marketing)
And Pubyear > 2012 And Pubyear < 2024 And (Limit-To (Subjarea
, "Medi") Or Limit-To (Subjarea , "Heal") Or Limit-To (Subjarea ,
"Nurs") Or Limit-To (Subjarea , "Phar") Or Limit-To (Subjarea ,
"Bioc") Or Limit-To (Subjarea , "Dent") Or Limit-To (Subjarea ,
"Immu")) And (Limit-To (Doctype , "Ar")) And (Limit-To
(Language , "English"))
```

This query resulted in 72 documents.

2.7 Data Analysis

The study employed various analytical techniques: Co-reference network analysis, Citation analysis of cited sources, Document and organization citation analysis, Author cooperation analysis, and Keyword co-occurrence analysis. These techniques were used to identify influential authors, country distribution, and to generate clusters or flows in hospital social media marketing research.

3. Result

3.1 Social Media Marketing Annual Publication Trends

Scientific publications on social media in hospital indexed on Scopus are the most numerous in 2019, with as many as eleven publications (15.3%). The next order of the number of publications is in 2020, as many as ten publications (13.8%); in 2021, as many as nine publications (12.5%); in 2022, as many as eight publications (11.1%); in 2016 as many as seven publications (9.72%), in 2018, 2014 and 2013 as many as five publications (6.94%), in 2023 as many as four publications (5.55%), and in 2017 as many as two publication (2.77%). Figure 2 shows more clearly the trend of scientific publications on social media in hospitals.

3.2 Top Journal

The order of journals is Journal of Medical Internet Research with six publications, Health Marketing Quarterly with five publications, Indian Journal of Public Health Research And Development with three publications, Aesthetic Surgery Journal with one publication, and Annals Of Plastic Surgery with one publication. Figure 3 clearly shows the scientific journal publications on social media in hospital.

3.3 Number of Productive Researchers Conducting Scientific Publications on Social Media in Hospital

Ford, E.W. and Huerta, T.R., have made three scientific publications each. Menachemi, N.; Merchant, R.M.; Kazley, A.S; Asch,D.A have done two scientific publication each. Aboalshamat, K; Aase,L; Adeola,O and Adrien Demes,J.E have done one publication each. Figure 4 shows more clearly the number of productive researchers who have made scientific publications on social media hospitals.

3.4 Top Author affiliation social media in Hospital

Affiliates/institutions that are productive in conducting scientific publications on social media hospitals from the top order are The Ohio State University College of Medicine with four publications, The Ohio State University with three publications, University of Pennsylvania with three publications, University of California, Los Angeles with three publications, FHI 360 with three publications, David Geffen School of Medicine at UCLA with two publications, The University of Auckland with two publications, VA Medical Centre two publication, The Ohio State University Wexner Medical Centre with two publication, and The University of North Carolina at Greensboro with two publication. Figure 5 clearly shows the affiliations /institutions that contribute to the publication of research findings on social media hospitals which are productive.

3.5 Top Country

Countries that are productive in conducting scientific publications on social media hospitals from the top are United States with 35 publications, India with seven publications, Australia with five

publications, Canada with four publications, China with three publications, Indonesia with three publications, Italy with three publications, United Kingdom with three publications, Germany with two publication and Japan with two publications. Figure 6 clearly shows the countries that are productive in publishing research on social media hospitals.

3.6 Number of Scientific Publications on Social Media in Hospital by Subject

The subjects of scientific publications on social media hospitals with the most publications are Medicine with fifty seven publications, Health Professions with eleven publications, Business, Management, and Accounting with seven publications, Nursing with six publications, Pharmacology, Toxicology and Pharmaceutics with six publications, Biochemistry, Genetics, and Molecular Biology with four publications, Agricultural and Biological Sciences with two publications, Computer Science with two publication and Immunology and Microbiology with two publication. Figure 7 shows more clearly the number of scientific publications on social media hospitals with by subject.

3.8 Social Media Marketing Research Network Visualization Map

Keyword analysis in this study is from 1047 keywords, then selected with the minimum number of keyword occurrences of 5 so that 59 keywords that have a strong relationship are obtained. The keyword most used by the author is survey. Visualization of keyword analysis in this study can be seen in Figure 8.

Based on Figure 8, the search results using the social media in hospital keyword, the development map of research publications on social media in hospital indexed in the Scopus *database* from 2013 - 2023 formed 4 clusters. Cluster 1 is coloured red and consists of 21 keywords, with the top detail's adolescent, adult, article, controlled study, coronavirus disease 2019, drug marketing, female, health care personnel, health personal, health personal attitude, human experiment, interview, major clinical study, male, middle aged, perception, pharmacist, qualitative research, questionnaire, survey and questionnaire and young adult. Cluster 2 is green and consists of 19 keywords with the top details as cross-sectional studies, cross-sectional study, economics, financial management, health care delivery, health care quality, hospital, hospitals, humans, information dissemination, internet, marketing, marketing of health service, organization and manage, procedures, social media, standard, statistics and numerical, united states. Cluster 3 in blue consists of 11 keywords, with the top details awareness, child, Facebook, health care policy, health education, health promotion, medical information, priority journal, social marketing, social network and twitter. Cluster 4 is yellow and consist of 8 keywords with the top details as education, medical education, medical society, physician, private practice, surgeon, surgeons, university hospital.

Identification	Step 1	Records were identified using the search database of Scopus (n = 216)
Assessment of Eligibility	Step 2	Publication dates from 2013 until 2023 (n = 135)
Inclusion and Exclusion	Step 3	Inclusion Criteria Eligible records were assessed based on the area of medicine, environmental science, engineering, multidisciplinary (n = 91)
	Step 4	Records were identified using document type "Article", publication stage "final", journal language "english" (n = 72)
Selection	Final	Records are selected (n = 72)

Figure 1. The steps of searching and selecting articles

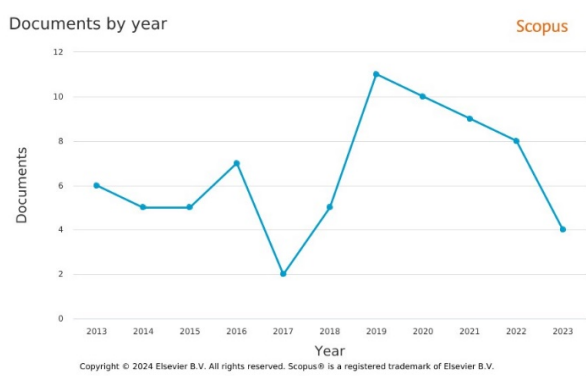


Figure 2. The trend of Scientific Publications on social media in hospital

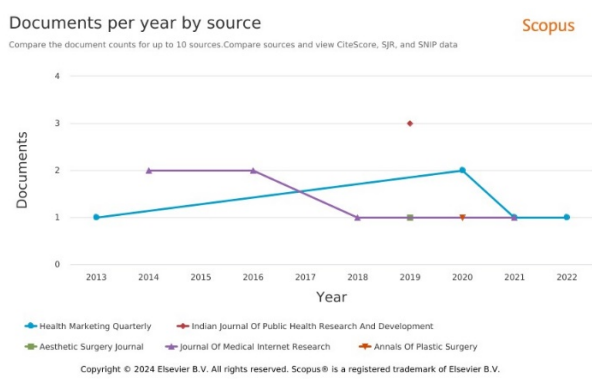


Figure 3. Journal of Scientific Publications on social media in hospital

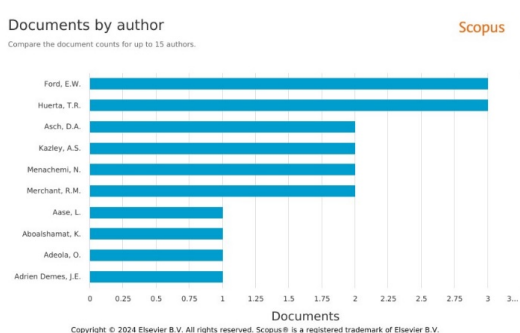


Figure 4. Number of Productive Researchers with Scientific Publications on Social Media in Hospital

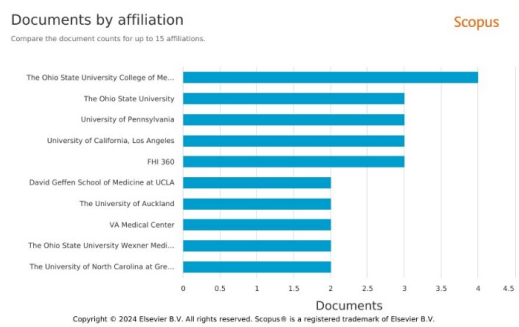


Figure 5. Affiliates/Institutions that are Productive in Publishing Research Results About Social Media in Hospital

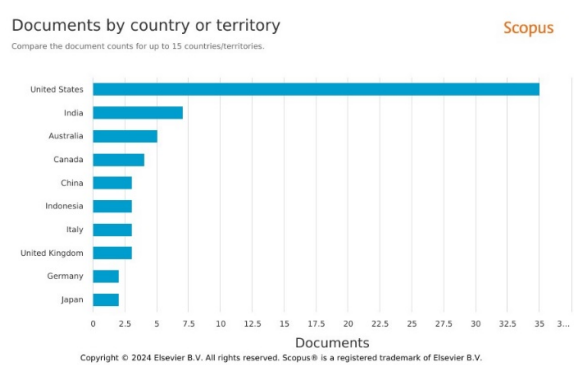


Figure 6. Countries That Are Productive In Publishing Research Results About Social Media in Hospital

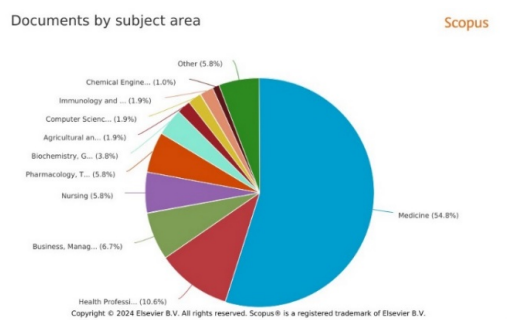


Figure 7. Number of Scientific Publications on Social Media in Hospital by Subject

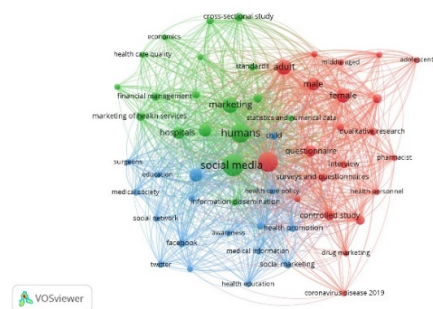


Figure 8. Keyword Visualization
Source: VOSviewer

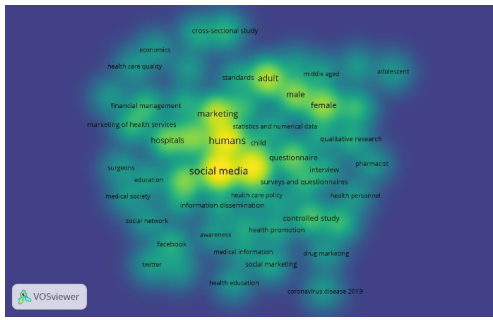


Figure 9. Visualization of Keyword Density

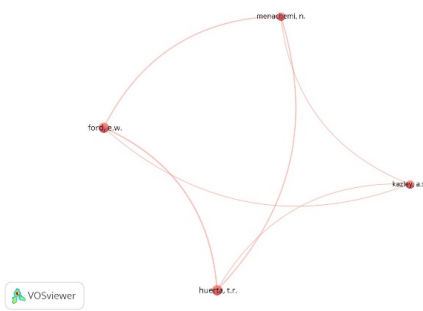


Figure 10. Author Collaboration Visualization Map

VOSviewer can display keyword density as indicated by *density visualization*. The higher keyword density illustrates that the research topic in that field has been studied a lot. Conversely, if the density is low, it can be an opportunity for new research. The complete keyword density can be seen in Figure 9.

Figure 9 displays the density or intensity of research on social media marketing using the top 59 keywords. The visualization map above reveals that social media, humans, and marketing are frequently mentioned and receive significant attention from the scientific community. Using this data, the researcher can identify new and original insights regarding social media marketing studies.

3.9 Author Collaboration Visualization Map

The Vosviewer assumptions are predicated on the stipulation that every author is obliged to submit a minimum of two articles. The obtained results are illustrated in Figure 10. Figure 10 illustrates the collaboration of four authors who constitute a single group or cluster.

4. Discussion

The findings of this study demonstrate a significant parallel growth between the advancement of social media and the increase in research on hospital social media marketing. Over the past decade, the utilization of social media in hospital marketing has evolved rapidly, mirroring the broader expansion and integration of social media into various aspects of professional and personal life. This study employed bibliometric analysis to explore the trends, key contributors, and geographical distribution of research in this burgeoning field.

The analysis, conducted using VOSviewer software, revealed that the most frequently occurring keywords in hospital social media marketing research are "social media," "humans," and "marketing." These keywords reflect the central themes and focal points of the research, emphasizing the role of social media as a tool for human interaction and marketing within the healthcare sector. The keyword analysis indicates that the discourse around hospital social media marketing predominantly revolves around how these platforms facilitate human engagement and serve as effective marketing channels.

The study identified a total of 72 publications related to social media marketing in hospitals, authored by a diverse group of 140 researchers. This body of work underscores the collaborative nature of research in this area, with multiple authors often contributing to single studies, reflecting the interdisciplinary and multifaceted approach required to understand and leverage social media for hospital marketing. The distribution of these publications over the years shows a notable increase in interest, particularly from 2016 onwards, with peaks in publication numbers in 2019 and 2020. This

trend suggests a growing recognition of the importance and impact of social media marketing within the healthcare industry.

Geographically, the United States emerged as the primary source of research on social media marketing in hospitals, with 35 publications, accounting for nearly half of the total output. This dominance is indicative of the advanced state of healthcare marketing practices in the United States, as well as the extensive use of social media platforms in the country. Other countries contributing significantly to this research include India, Australia, Canada, China, and Indonesia. This international distribution highlights the global relevance and applicability of social media marketing strategies in healthcare, as hospitals worldwide seek to enhance their outreach and engagement through digital platforms. The study also highlighted the most productive researchers and institutions in this field. Leading contributors include researchers like Ford, E.W., and Huerta, T.R., each with three publications. The Ohio State University College of Medicine was identified as the top institution, contributing four publications. Other notable institutions include the University of Pennsylvania, the University of California, Los Angeles, and FHI 360, each with three publications. This concentration of research activity within a few key institutions underscores the role of academic and research centers in advancing knowledge and practice in hospital social media marketing.

This study provides valuable insights into the dynamics and characteristics of research on social media marketing as a hospital strategy. The bibliometric analysis underscores the growing interest and contributions in this field, reflecting the parallel growth of social media's influence and the recognition of its potential in healthcare marketing. The findings suggest that future research could explore new and under-examined aspects of social media marketing, leveraging the identified trends and key contributors to further enhance the understanding and application of these strategies in the healthcare sector. This study lays the groundwork for future scholars to delve deeper into the nuances of social media marketing, discovering new areas of interest and contributing to the continued evolution of this vital field.

5. Conclusion

This study provides valuable insights into the dynamics and characteristics of research on social media as a hospital marketing strategy that emphasizes the growing interest and contributions in this field. The use of bibliometric analysis in this study is a promising avenue for future scholars to further explore the unrevealed aspects of social media marketing and discover new areas of interest.

Author Contribution

F.R. proposed, reviewed relevant literature, processed and visualized data. Q.A. reviewed, edited, and prepared the article.

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Competing financial interests

The authors have no conflict of interest.

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