

## General

# The Doctor-Patient relationship: A bibliometric analysis

Meghana Konda<sup>1</sup>, Murdoc Gould<sup>1</sup>, Rohan Mangal<sup>2</sup>, Anjali Daniel<sup>3</sup>, Thor Stead<sup>4</sup>, Latha Ganti<sup>5</sup>

<sup>1</sup> Rollins College, <sup>2</sup> University of Miami School of Medicine, <sup>3</sup> Emory University, <sup>4</sup> The Warren Alpert Medical School, Brown University, <sup>5</sup> Medical Science, Brown University

Keywords: bibliometric analysis, doctor-patient relationship, physician-patient communication

<https://doi.org/10.52965/001c.90429>

---

## Health Psychology Research

Vol. 11, 2023

---

### Objective

Doctor-patient communication is an essential clinical practice necessary to improve overall patient experience and their adherence to treatment. This form of communication involves first, listening without interruptions and then, conveying information in a clear and concise manner.

### Methods

A bibliometric analysis was conducted on publications extracted from the Web of Science database related to doctor-patient communication from 2012 to 2022 using the VOSviewer 1.6.15 software to visualize trends.

### Results

20,376 articles were from 2012 to 2022 met the inclusion criteria of being recognized by the search phrase “physician-patient communication.” Throughout the defined time period, USA, Canada, and Germany consistently took the top three positions in terms of publishing the most articles regarding the topic. Additionally, the *Patient Education and Counseling* Journal was the journal with the most publications regarding the topic.

### Innovation

A bibliometric analysis is a relatively novel way to frame research in a given area. It allows researchers to analyze trends in publication, and capture data from multiple disciplines.

### Conclusion

The number of articles published annually regarding doctor-patient communication has constantly been increasing from 2012-2022, demonstrating its importance as a crucial component of effective health care.

## 1. INTRODUCTION

The doctor-patient relationship is the foundation of medical care and has a pivotal role in the healthcare system.<sup>1</sup> Doctor-patient communication has significant effects on patient outcomes as it allows patients to engage in informed decision-making, improving their adherence to treatment. As physicians encourage open communication regarding a patient’s socioeconomic status and lifestyle practices, they can better understand the patient’s past medical history, medications, and reservations about certain treatments.<sup>2</sup> Establishing a trustworthy relationship allows doctors to provide appropriate counseling and recommend treatment options that are best suited for patients.<sup>3</sup>

Extensive research literature has been published establishing that the way physicians treat and interact with their

patients is influenced by their perception of them. Physicians tend to be more patient-centered and less contentious when they believe the patient is a good communicator who will thoroughly adhere to their recommendations.<sup>4</sup> Patients who ask questions, express their concerns, and state their preferences are more likely to form an effective relationship with their physician.<sup>4</sup> This allows physicians to better accommodate patients and create shared decisions. However, this can only be achieved if physicians take responsibility to encourage patients to be more open and communicative. Patients may be hesitant to actively engage in discussions regarding their care due to a variety of factors, including but not limited to fear, anxiety, embarrassment, or a lack of knowledge. Physicians should create a safe and supportive environment by actively listening to patients, acknowledging their concerns and preferences, and responding with empathy. Therefore, it is crucial that physicians are provided with communication training

as part of their medical education to ensure that they are equipped with the skills necessary to improve the overall patient experience.<sup>5</sup>

Since it has been established that doctor-patient communication is essential to patient recovery and satisfaction, it is critical to broaden its role in healthcare. Researchers and educators need to be more aware of this relationship between effective communication and patient health outcomes to improve the quality of medical care provided.

## 2. METHODS

### 2.1. DATA SOURCE & SEARCH STRATEGY

The dataset for this study was obtained from the Web of Science (WOS) Core Collection. This collection comprises numerous articles on scientific content, impact, and collaboration from the 1900s to the present day. Past literature has suggested that the WOS database is optimal for bibliometric analysis due to its abundance of high-quality publications.<sup>6</sup>

The doctor-patient communication search was restricted to the period between January 2012 to December 2022 and was analyzed in two year intervals, except for the year of 2022 which was analyzed separately. In the WOS database, the query was limited to the topic field which included the title, abstract, and keywords. “Physician patient communication” was the search term that was used to retrieve the articles in the study. It is important to note that no other limitations such as punctuation and capitalization were added to the search term. Additionally, there was no exclusion based on language or type of article, as all documents surrounding the search term were analyzed.

The retrieved publications were exported in groups of 500 documents at a time as a delimited text file with the “full record and cited references” of each article. After filtering out and excluding articles which did not meet the inclusion criteria for the time period, the following information was extracted and analyzed: title, abstract, author, keywords, publishing source, country of publication, and the number of citations.

### 2.2. DATA ANALYSIS

In this study, a bibliometric analysis was conducted. A bibliometric analysis is a quantitative analysis of literature that provides researchers with a comprehensive understanding of a specific research area.<sup>7</sup> From the WOS core collection, all delimited text files were imported into the VOSviewer software (version 1.6.15) for analysis and trend collection. From each article, data regarding authors, abstracts, keywords, journals, and citations were retrieved to analyze trends in two year intervals. The VOSviewer software was utilized to determine top ranking authors, journals, and keywords to later construct bibliometric maps. These bibliometric maps provided a visual representation of bibliographic coupling and established which journals and authors had the most frequent concurrent citations.<sup>8</sup> The bibliometric map provides an outline of the frequency of the term (author, country, journal, and keywords), as well

as the strength of the connection and interconnectedness between terms. Each term is connected to other terms by links which have varying lengths and thickness to indicate the strength of the connection.<sup>9</sup>

## 3. RESULTS

A total of 31,123 publications were retrieved. After excluding irrelevant articles that did not fit into the criteria based on the date of publication, 20,376 articles published between

2012-2022 were analyzed. Of these, 17,133 (84.1%) were original research articles, 1,927 (9.5%) were review articles, 378 (1.9%) were editorials, 190 (1.0%) were abstracts, and the remaining forms of publications were letters and news. The majority of the publications, 19,152 (93.9%), were written in English, with authors from 168 different countries and regions. The 20,376 articles were written by 200 authors and were published in 272 different journals. Additionally, the number of articles regarding physician-doctor communication has been constantly increasing over time as seen in [Figure 1](#).

A comprehensive analysis was conducted to identify the countries that published the most articles about doctor-patient communication. This analysis included literature from 168 different countries and regions. The United States was the most prominent country, publishing approximately 918 articles annually and therefore, maintaining its position as the top publisher of the topic for the past 11 years. The U.S. also had the highest total number of citations, accounting for 87% of all articles cited on the topic. Consistently for the past eleven years, Canada and Germany have ranked second and third, respectively, for the number of articles published, with approximately 298 and 117 articles published annually.

Figures [2A](#) and [2B](#) display the geographical distribution of publications on doctor-patient communication in 2012 and 2022, respectively. In this bibliometric map, the size of each circle is representative of the amount of articles that were published from the corresponding country.

Additionally, links that connect the circles represent co-authorship and are classified as a cluster with the same color. The line thickness represents the strength of global collaboration and the intensity of connectivity between different countries. The United States had the strongest international collaboration network with an average of 721 total link strengths, followed by the Netherlands (~246), England (~222), and Canada (~182). After analyzing all the data, it was concluded that the United States had the most linkage with Canada due to several co-authorship published papers, as well as citations.

In total, 2,394 articles were published in the top 10 most active journals, which accounted for 12% of all publications on physician-patient communication. The Patient Education and Counseling journal ranked as the journal with the highest number of publications in the past 11 years. It accounted for 3% (703) of all articles published regarding the search term. Additionally, the Journal of General Internal Medicine (283), Plos One (267), BMJ Open (228), and

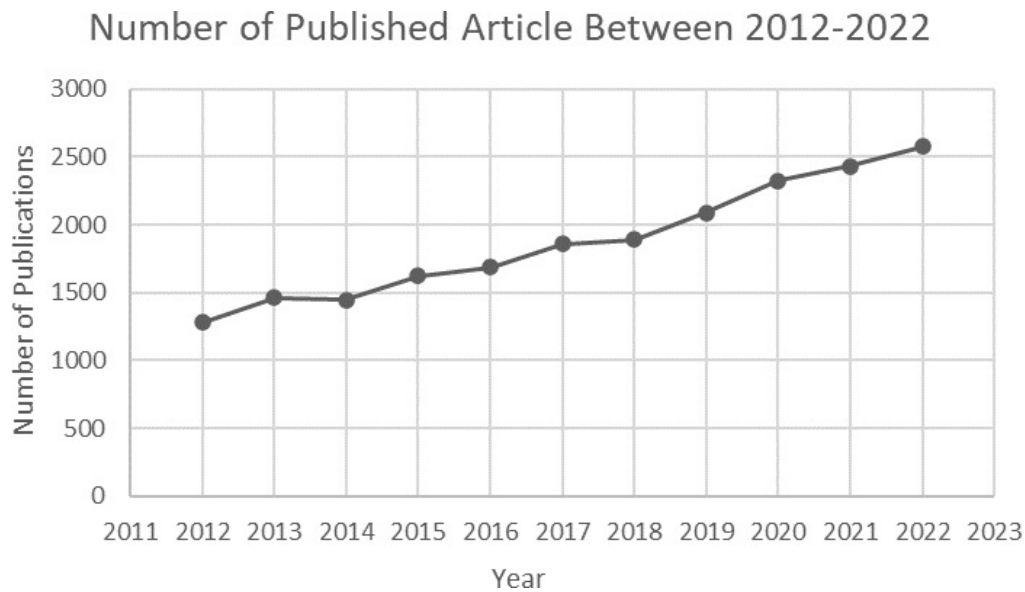


Figure 1 represents the total number of articles published annually from 2012 to 2022 and shows the increasing trend.

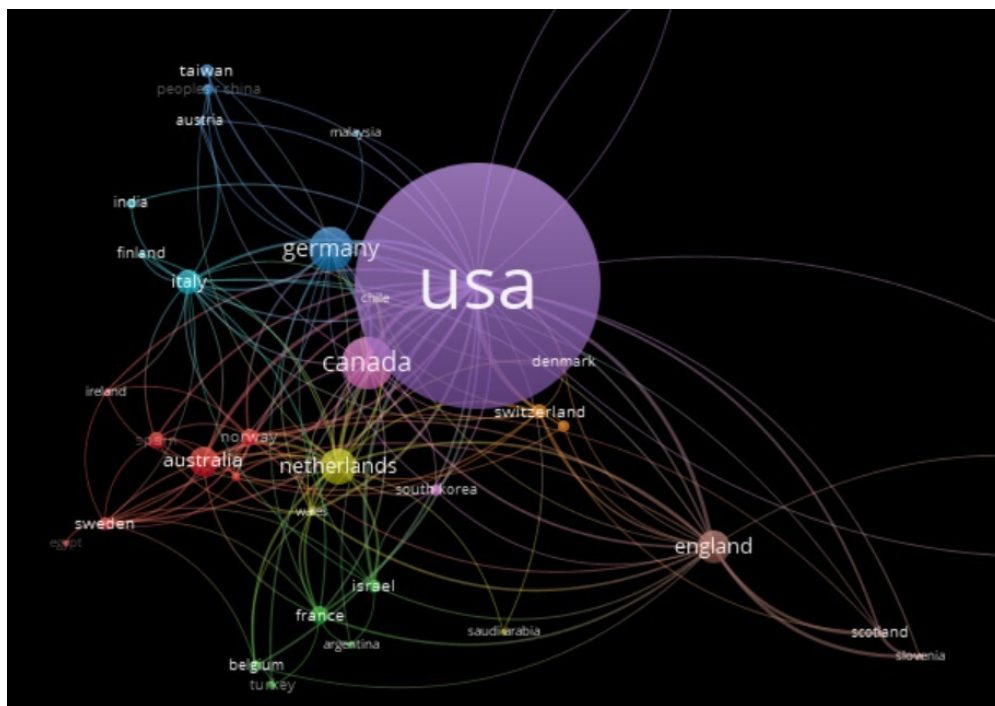
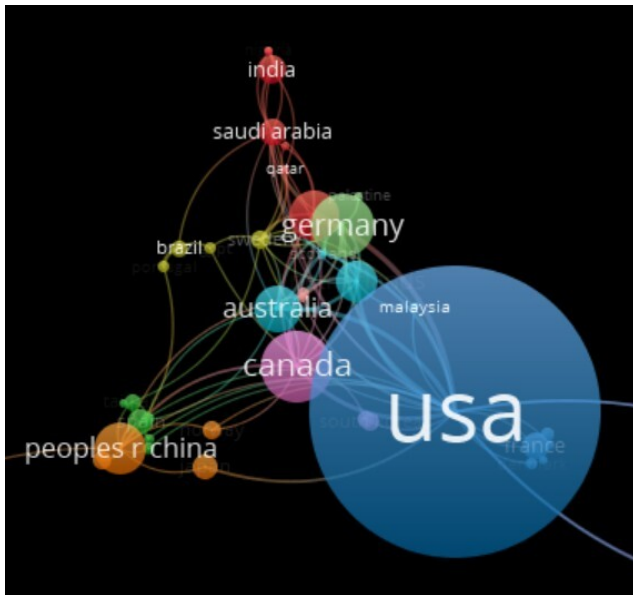


Figure 2A displays the distribution and frequency of published papers in various countries regarding physician-patient communication in 2012.

BMC Health Services Research (226) were ranked as the top five journals with the most publications on physician-patient communication. Additionally, the United States Department of Health and Human Services and the National Institute of Health were ranked as the top agencies funding journals to publish articles regarding the topic. In comparison with 228 other funding sources, these two United States agencies accounted for 32.7% of all funding. Figures 3A and 3B demonstrate the changes in the top journals with the most published articles from 2012 to 2022. Figure 4 repre-

sents the total number of published articles in the past 11 years of the top 10 journals.

After analyzing the dataset, several keywords were identified to be consistently relevant throughout the years. Words such as “student” (n~683) and “resident” (n~676) were part of the top 10 keywords every year from 2012-2022. Additionally, over time, “empathy” was another keyword with a 13.6% concurrency rate, followed by “communication skill” (8.2%) and depression/anxiety (6.4%). Additionally, it must be noted that in 2022, the words “dis-



**Figure 2B displays the distribution and frequency of published papers in various countries regarding physician-patient communication in 2022.**

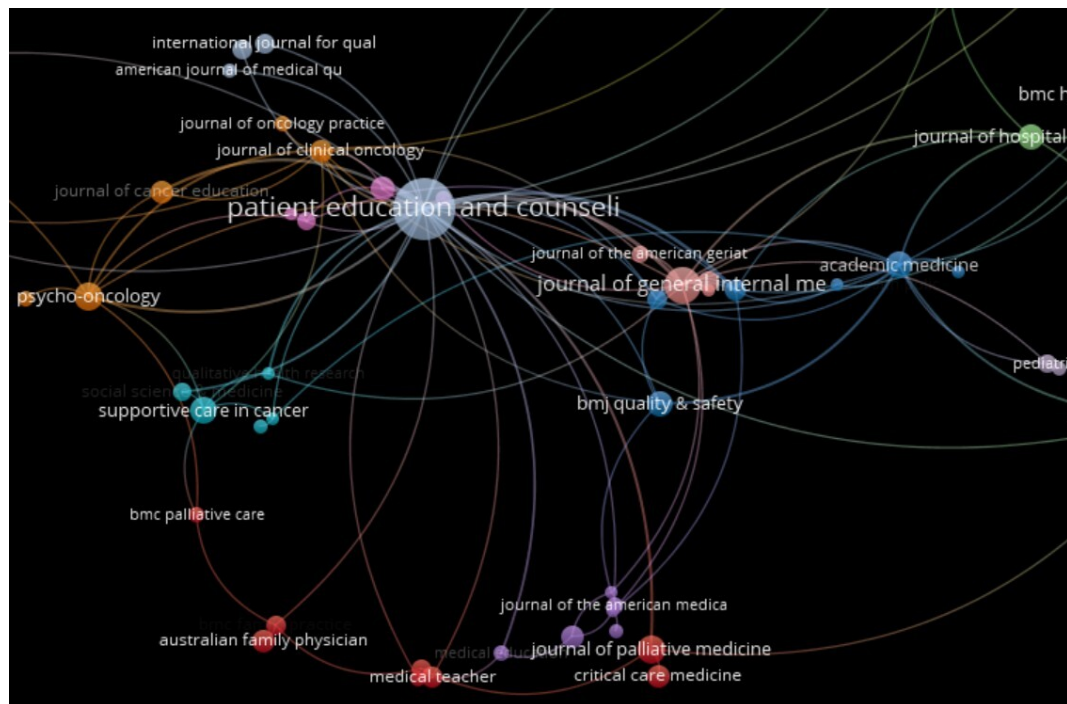
ease” and “pandemic” account for two of top three keywords. [Figure 5](#) displays the most frequently occurring keywords throughout the years. In terms of citation, nursing ( $n=6,376$ ) and palliative care ( $n=2,490$ ) were the most common topics for which physician-patient communication articles were used. Shared decision making ( $n=2,939$ ) and interprofessional education ( $n=803$ ) were the most frequent subtopics that were cited in the 20,376 articles.

## 4. DISCUSSION AND CONCLUSION

### 4.1. DISCUSSION

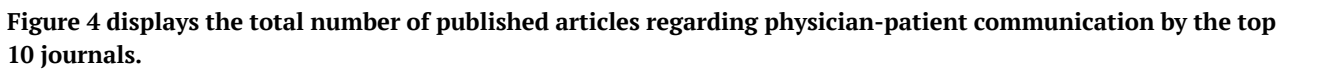
Doctor-patient communication is an essential component in the delivery of proper health care.<sup>10</sup> This approach focuses on establishing interpersonal relationships, facilitating clear and accurate exchange of information, and encouraging patients to participate in informed decision making. By establishing proper communication with the patient, the physician can gain a better understanding of their needs and expectations, leading to a more trustworthy relationship. Using bibliometric analysis, this study focuses on examining current literature on this topic including characteristics of publications, countries, journals, authors, citations, and recurring keywords.

Interestingly, 95.6% of all publications regarding doctor-patient communication were articles, letters, and editorials. A previous study reported that these article reviews, editorials, and letters, were more popular on social media and networking platforms.<sup>11</sup> As these forms of publications are more available to the general public and help raise awareness of the topic, future research articles regarding physician-patient communication should be published in the same manner. From 2012 to 2022, the number of articles published in these easily accessible formats has approximately doubled from 1,212 to 2,232 publications. Overall, by publishing articles in a format that is easily accessible to the general public, authors can have a greater impact and influence on the healthcare system.



**Figure 3A displays the distribution and frequency of published papers in various journals regarding physician-patient communication in 2012.**





A bibliometric analysis is a relatively novel way to frame research in a given area. It allows researchers to analyze trends in publication, and capture data from multiple disciplines. The doctor-patient relationship is a topic that encompasses all specialties within medicine and spans the disciplines across medicine in general. Not surprisingly, our analysis revealed a total of 20,376 documents were published across 168 different countries and regions.

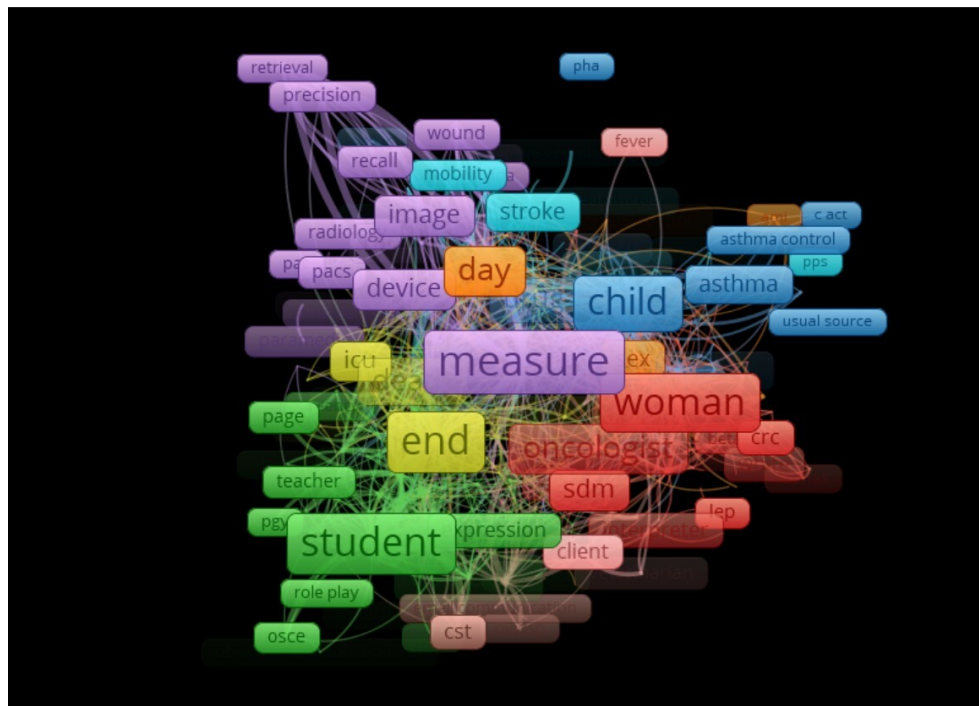


Figure 5 displays the most common keywords used in the relevant articles published between 2012 and 2022.

of the United States and Canada. The United States had the highest number of publications regarding the topic, accounting for approximately 50% of total publications during the defined time period. In the United States, there is a growing demand for holistic care for patients that takes their physical, psychological, and emotional status into account. The Accreditation Council for Graduate Medical Education, which accredits all medical training programs for physicians in the United States, has emphasized the importance of doctor-patient communication and has established it as one of the six training components necessary to demonstrate competence as a physician.<sup>12</sup> Doctor-patient communication is constantly being promoted as an interdisciplinary approach to medical care by the United States, in addition to other European countries. However, there is a significant disparity of articles being published between North American and European countries and Asian, African, Australian, and South American countries, which only account for less than 7% of all articles published on the topic. This could suggest a lack of awareness on understanding the importance of enforcing doctor-patient communication as an attribute of effective medical care. To address this issue, it is crucial to support and fund international research collaboration so strategies focus more on improving doctor-patient communication.

After analyzing the organizations that support ongoing studies regarding doctor-patient communication, it can be established that colleges and universities are pivotal for the development of scientific research. Harvard University, Harvard Medical School, and Johns Hopkins University had the most affiliations with research studies in this area, accounting for approximately 47% of all affiliations. Additionally, geographical and cultural expectations were also evident in the level of cooperation between organizations.

Cooperation and co-authorship was 4.3 times more prominent between researchers from America and Canada in comparison to researchers from countries such as India, China, and Saudi Arabia.

Articles related to doctor-patient communication have been published in 272 journals.

The top 10 most productive journals published 2,394 articles, accounting for 12% of all publications on the topic. The top two journals with the most publications on the topic were the Patient Education and Counseling Journal and the Journal of General Internal Medicine. These international and easily accessible journals aim to enhance understanding of communication mechanisms in health care. Since their main audience includes healthcare workers, researchers, and the general public, they are able to directly impact global healthcare systems by promoting doctor-patient communication as an essential component based on scholastic evidence.

### 4.3. CONCLUSIONS

By analyzing the frequency of keywords, the future direction of research regarding physician-patient communication can be determined. The bibliometric analysis of the selected articles indicated that there were four primary hotspots or focus areas in the research of the topic. One primary cluster describes the impact of students, nurses, and residents on the effectiveness of physician-patient communication. Patients could feel uncomfortable when having students or residents in the same room with them compared to when they are alone with the doctor. The recurrence of these keywords emphasizes the importance of helping ease away this uncomfortable feeling in patients. This can be achieved by first introducing students and res-

idents and then, asking for the patient's permission to ensure that they are comfortable with having them in the room. Clusters two and three focus on specialties where doctor-patient communication is commonly used. For example, keywords such as "woman," "palliative care", and "asthma" represent areas in medicine where doctor-patient communication is effective for conveying treatment options and recommendations. Given that gynecology, oncology, and pulmonology are specialties that require conveying sensitive information between physicians and patients, it is critical that doctors develop and follow a framework to provide the best support and care for their patients. Lastly, cluster four pertains to words describing different components of an efficient doctor-patient communication framework. For instance, words such as "recall," "empathy," and "communication skill" represent key features crucial to thoroughly understanding a patient's past medical history and recommending treatment options that the patient is comfortable with. By focusing on these hotspots, further research can strengthen the correlation between these keywords and the productive use of doctor-patient communication in healthcare.

There are a few limitations to note in this study. Firstly, the Web of Science database was the only database used to retrieve articles and publications for analysis. Therefore, this bibliometric analysis does not provide a complete overview of all articles published between 2012-2022 on doctor-patient communication, as other databases were not utilized. Additionally, due to the need to analyze articles for keywords and citations, only a select number with free full text available were used for analysis, which further limited the scope of the study.

.....

#### CONFLICT OF INTEREST STATEMENT

None of the authors have any real or perceived conflicts of interest.

Submitted: October 18, 2023 EST, Accepted: November 11, 2023 EST

## REFERENCES

1. Wang Y, Wu Q, Wang Y, Wang P. The Effects of Physicians' Communication and Empathy Ability on Physician–Patient Relationship from Physicians' and Patients' Perspectives. *J Clin Psychol Med Settings*. 2022;29(4):849-860. [doi:10.1007/s10880-022-09844-1](https://doi.org/10.1007/s10880-022-09844-1)
2. Benedetti F. Placebo and the new physiology of the doctor-patient relationship. *Physiological Reviews*. 2013;93(3):1207-1246. [doi:10.1152/physrev.00043.2012](https://doi.org/10.1152/physrev.00043.2012)
3. Duffy FD, Gordon GH, Whelan G, et al. Assessing competence in communication and interpersonal skills: the Kalamazoo II report. *Acad Med*. 2004;79(6):495-507. [doi:10.1097/00001888-200406000-00002](https://doi.org/10.1097/00001888-200406000-00002)
4. Street RL Jr, Gordon H, Haidet P. Physicians' communication and perceptions of patients: is it how they look, how they talk, or is it just the doctor? *Soc Sci Med*. 2007;65(3):586-598. [doi:10.1016/j.socscimed.2007.03.036](https://doi.org/10.1016/j.socscimed.2007.03.036)
5. Haidet P, Stein HF. The role of the student-teacher relationship in the formation of physicians. The hidden curriculum as process. *J Gen Intern Med*. 2006;21(Suppl 1):S16-S20. [doi:10.1111/j.1525-1497.2006.00304.x](https://doi.org/10.1111/j.1525-1497.2006.00304.x)
6. Chen Y, Zhang X, Chen S, et al. Bibliometric analysis of mental health during the COVID-19 pandemic. *Asian Journal of Psychiatry*. 2021;65:102846. [doi:10.1016/j.ajp.2021.102846](https://doi.org/10.1016/j.ajp.2021.102846)
7. Li B, Lu Y, Li J, Jiang H, Wang Y. Exploring the spatial-temporal variations and policy-based driving force behind groundwater contamination and remediation research in past decades. *Environ Sci Pollut Res*. 2021;28(11):13188-13201. [doi:10.1007/s11356-020-11382-y](https://doi.org/10.1007/s11356-020-11382-y)
8. van Eck NJ, Waltman L. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*. 2010;84(2):523-538. [doi:10.1007/s11192-009-0146-3](https://doi.org/10.1007/s11192-009-0146-3)
9. Perianes-Rodriguez A, Waltman L, van Eck NJ. Constructing bibliometric networks: A comparison between full and fractional counting. *Journal of Informetrics*. 2016;10(4):1178-1195. [doi:10.1016/j.joi.2016.10.006](https://doi.org/10.1016/j.joi.2016.10.006)
10. Arora NK. Interacting with cancer patients: the significance of physicians' communication behavior. *Soc Sci Med*. 2003;57(5):791-806. [doi:10.1016/s0277-9536\(02\)00449-5](https://doi.org/10.1016/s0277-9536(02)00449-5)
11. Haustein S, Costas R, Larivière V. Characterizing social media metrics of scholarly papers: the effect of document properties and collaboration patterns. *PloS one*. 2015;10(3):e0120495. [doi:10.1371/journal.pone.0120495](https://doi.org/10.1371/journal.pone.0120495)
12. Effective patient–physician communication. Committee Opinion No. 587. American College of Obstetricians and Gynecologists. *Obstet Gynecol*. 2014;123(2):389-393. [doi:10.1097/01.aog.0000443279.14017.12](https://doi.org/10.1097/01.aog.0000443279.14017.12)