

## Unveiling Global Trends in Coronary Heart Disease Research: A Scopus Bibliometric Analysis

**Qonita Sari Bustomi<sup>1</sup>, Salma Fathinah<sup>2</sup>, Nurul Ilma Haryono<sup>3</sup>,  
Rian Ka Praja<sup>4</sup>✉**

<sup>1,2,3,4</sup>Universitas Palangkaraya, Indonesia

✉ [riankapraja@med.upr.ac.id](mailto:riankapraja@med.upr.ac.id)

Received: 03-04-2024

Revised: 02-05-2024

Accepted: 02-05-2024

### ABSTRACT

The heart stands as a critical organ within the human body, susceptible to various disorders with distinct characteristics. Notably, coronary heart disease, due to its escalating worldwide prevalence, commands significant attention. However, this disease is not restricted to a specific age group and can afflict those not adhering to healthy lifestyles. In this study, our objective is to investigate the global epidemiology of coronary heart disease from 2014 to 2023 by conducting a comprehensive bibliometric analysis of the scientific literature. This study employs Data Collection, Data preprocessing, Co-occurrence Analysis, Co-authorship Analysis, Data Visualization and Analysis, and Ethical Consideration. The data were collected from the Scopus database and filtered by adding the keywords "coronary heart disease," "mortality," "atherosclerosis," and "hypertension" from 2014 to 2023. The study encompasses trends in publication output, Co-occurrence analysis findings, and Co-authorship analysis findings. Coronary heart disease is a major concern in global epidemiology. To guide future studies, this bibliometric analysis of Scopus data (2014-2023) examines publication trends. Findings reveal research gaps, increased publications on the disease, and decreased focus on public health. The rise in pandemic-related publications highlights its impact and viral challenges. This bibliometric analysis underscores the waning attention and research focus on coronary heart disease within the broader scope of global epidemiology. This study emphasizes the ongoing need for dedicated research to elevate global epidemiological outcomes.



**Keywords:** bibliometric analysis, coronary heart disease, global epidemiology

## INTRODUCTION

The heart is one of the most vital organs in the human body. This organ can exhibit several disorders that can be identified<sup>1</sup>. One of the types most widely discussed due to its increasing prevalence worldwide is coronary heart disease<sup>2</sup>. Coronary heart disease is a condition that occurs as a result of the excessive accumulation of fatty substances in the inner layers of the coronary arteries walls<sup>3</sup>. Coronary heart disease is a major cause of death and disability in developed countries. Although the mortality for this condition has gradually declined over the last decades in western countries, it still causes about one-third of all deaths in people older than 35 years. The framingham heart study perfectly summarizes the risk factors that contribute to the development of coronary heart disease, providing critical information regarding objectives for the primary and secondary prevention of Coronary heart disease. One type of Coronary heart disease that most often causes clinical manifestations and death is Acute Coronary Syndrome (ACS). In 2014 the prevalence of SKA in Indonesia reached 1.5% and it is estimated that it will continue to increase every year<sup>4</sup>.

Coronary heart disease can affect anyone who hasn't adopted a healthy lifestyle. The Indonesian Society of Cardiovascular Specialists highlights a recent study conducted by the ARIC Community Surveillance Study in 2018 regarding patients with acute myocardial infarction (AMI) in the United States<sup>5,6</sup>. The research, conducted between 1995 and 2014, resulted in the statement that the

---

<sup>1</sup> Jumayanti, Anggi Lukman Wicaksana, and Eri Yanuar Akhmad Budi Sunaryo, "Kualitas Hidup Pasien Dengan Penyakit Kardiovaskular Di Yogyakarta," *Jurnal Kesehatan* 1 (2020): 1–12.

<sup>2</sup> Lindawati Farida Tampubolon et al., "Gambaran Faktor Yang Mempengaruhi Kejadian Penyakit Jantung Koroner (PJK) Di Pusat Jantung Terpadu (PJT)," n.d., <http://journal.stikeskendal.ac.id/index.php/PSKM>.

<sup>3</sup> Hendry Purnasidha Bagaswoto, Nahar Taufiq, and Budi Yuli Setianto, "A Simplified Risk Scoring System to Predict Mortality in Cardiovascular Intensive Care Unit," *Cardiology Research* 10, no. 4 (2019): 216–22, <https://doi.org/10.14740/cr884>.

<sup>4</sup> Rian Ka Praja and Azis Rohmansyah, "Bibliometric Analysis on Sports-Associated Infections in Athletes," *J. Anthr. Sport Phys. Educ* 7 (2023), <https://doi.org/10.26773/jaspe.230705>.

<sup>5</sup> Biykem Bozkurt et al., "Heart Failure Epidemiology and Outcomes Statistics: A Report of the Heart Failure Society of America," *Journal of Cardiac Failure* 29, no. 10 (2023): 1412–51, <https://doi.org/10.1016/j.cardfail.2023.07.006>.

<sup>6</sup> Sung Sug (Sarah) Yoon et al., "Trends in the Prevalence of Coronary Heart Disease in the U.S.: National Health and Nutrition Examination Survey, 2001–2012," *American Journal of Preventive Medicine* 51, no. 4 (2016): 437–45, <https://doi.org/10.1016/J.AMEPRE.2016.02.023>.

studied heart disease had affected 30% of individuals aged 35-54, showing an increasing annual incidence of the disease in young women compared to young men. The study's findings also reveal that risk factors such as hypertension and diabetes can elevate the risk of heart disease in young individuals<sup>7</sup>

Coronary heart disease is often perceived as a condition primarily affecting the elderly<sup>8</sup>. In the past, coronary heart disease was predominantly seen in individuals aged 60 and above, but there is now a trend of it affecting patients under the age of 40. This shift can be attributed to lifestyle changes, especially in an era of globalization where information is readily accessible<sup>9</sup>. Several behaviors such as consuming fast food high in saturated fats, smoking, alcohol consumption, overwork, lack of physical activity, and stress have become common in urban populations and are significant contributors to coronary heart disease<sup>10</sup>. All of these behaviors are recognized as risk factors for coronary heart disease. Ongoing research on coronary heart disease aims to develop concepts and methods for prevention and treatment. Bibliometric analysis of coronary heart disease has been relatively limited in scope<sup>11</sup>.

The process of coronary heart disease begins with the process of arteriosclerosis. Arteriosclerosis is a complex process involving the deposition of plasma lipoprotein and the proliferation of cellular elements within arterial walls<sup>12</sup>. This chronic condition develops through a series of stages that initiate with fatty streaks, primarily composed of foam cells, eventually progressing into plaque accumulations covered by a fibrous cap<sup>13</sup>. These plaques create a barrier to arterial

---

<sup>7</sup> Winnie Nirmala Santosa and Baharuddin Baharuddin, "Penyakit Jantung Koroner Dan Antioksidan," *KELUWIH: Jurnal Kesehatan Dan Kedokteran* 1, no. 2 (2020): 98–103, <https://doi.org/10.24123/kesdok.v1i2.2566>.

<sup>8</sup> Ikhsanuddin Qothi, Muhamad Robi'ul Fuadi, and Agus Subagio, "Profile of Major Risk Factors in Acute Coronary Syndrome (ACS) at Pusat Pelayanan Jantung Terpadu (PPJT) Dr. Soetomo Public Hospital Surabaya Between the Period of January-December 2019," 2021.

<sup>9</sup> Min Li et al., "Fruit and Vegetable Intake and Risk of Type 2 Diabetes Mellitus: Meta-Analysis of Prospective Cohort Studies," *BMJ Open* 4, no. 11 (2014), <https://doi.org/10.1136/bmjopen-2014>.

<sup>10</sup> Tetsuya Ohira and Hiroyasu Iso, "Cardiovascular Disease Epidemiology in Asia - An Overview," *Circulation Journal* 77, no. 7 (2013): 1646–52, <https://doi.org/10.1253/circj.CJ-13-0702>.

<sup>11</sup> Rusdin Zebua, Pustakawan Uin, and Bonjol Padang, "Analisis Bibliometrika Dan Kolaborasi Pengarang Terhadap Artikel Penelitian Penyakit Jantung Koroner Di Indonesia Tahun 2013-2017 Menggunakan Database Online Proquest," 2018.

<sup>12</sup> Melanie Nichols et al., "Cardiovascular Disease in Europe 2014: Epidemiological Update," *European Heart Journal* (Oxford University Press, 2014), <https://doi.org/10.1093/eurheartj/ehu378>.

<sup>13</sup> Udaya Ralapanawa and Ramiah Sivakanesan, "Epidemiology and the Magnitude of Coronary Artery Disease and Acute Coronary Syndrome: A Narrative Review," *Journal of*

blood flow and can trigger clinical events, especially in conditions conducive to plaque rupture and thrombus formation<sup>14</sup>.

Some bibliometric studies have indeed been conducted, albeit on different subjects, as exemplified by the work of Macias-Chapula in Ishak (2005). The aim of bibliometric analysis in this research is to assist librarians and researchers in tracking the evolution of coronary heart disease research in developing countries, particularly research published in foreign journals from 2016 to 2020<sup>15</sup>. The bibliometric analysis approach can also reveal the core journals in coronary heart disease research, the distribution of research articles on coronary heart disease per year, the dispersion of articles across various journals, and the level of collaboration among researchers<sup>16</sup>.

Understanding the landscape of research on coronary heart disease is crucial for identifying research trends, knowledge gaps, and areas requiring further exploration. This study will enable us to identify the publication trends, prominent authors and institutions, collaborative networks, and citation patterns within the field of coronary heart disease in global epidemiology<sup>17</sup>. The findings will not only contribute to the existing body of knowledge but also guide future research directions and facilitate evidence-based decision-making in the prevention and management of coronary heart disease. In this study, we aim to conduct a comprehensive bibliometric analysis of the scientific literature on coronary heart disease in global epidemiology by examining articles indexed in the Scopus database from 2014 to 2023<sup>18</sup>. In this study, our objective is to investigate the global epidemiology of coronary heart disease from 2014 to 2023 by conducting a comprehensive bibliometric analysis of the scientific literature.

---

*Epidemiology and Global Health* 11, no. 2 (2021): 169–77,  
<https://doi.org/10.2991/JEGH.K.201217.001>.

<sup>14</sup> Santosa and Baharuddin, “Penyakit Jantung Koroner Dan Antioksidan.”

<sup>15</sup> Akihiko Kitamura et al., “From around the World The Akita-Osaka Study,” 2008.

<sup>16</sup> Melenia Saputri and Sinta Ratna Dewi, “Potensi Interaksi Polifarmasi Pasien Jantung Koroner (PJK) Di Rumah Sakit I.A. Moeis Samarinda,” *Jurnal Sains Dan Kesehatan* 5, no. 2 (2023): 109–14, <https://doi.org/10.25026/jsk.v5i2.1709>.

<sup>17</sup> Véronique L Roger et al., “Trends in Incidence, Severity, and Outcome of Hospitalized Myocardial Infarction,” *Circulation* 121, no. 7 (2010): 863–69, <https://doi.org/10.1161/CIRCULATIONAHA.109.897249>.

<sup>18</sup> Prachi Bhatnagar et al., “Trends in the Epidemiology of Cardiovascular Disease in the UK,” *Heart* (BMJ Publishing Group, 2016), <https://doi.org/10.1136/heartjnl-2016-309573>.

## RESULT AND DISCUSSION

### Trend in Publication Output

A total of 1,283 articles were included in the bibliometric analysis. The analysis of publication output over the period from 2014 to 2023 revealed a significant increase in the number of publications related to the Global Epidemiology of Coronary heart disease. Figure 1 illustrates the trend in publication output over time.

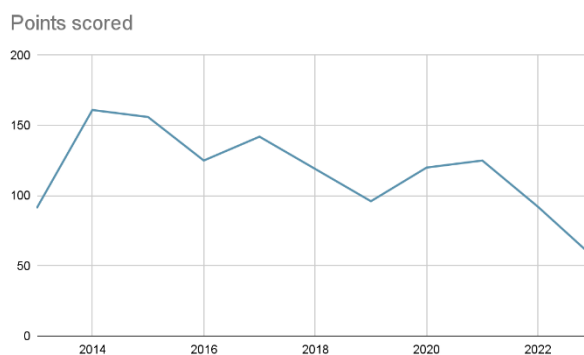


FIGURE 1. Research trend in sports-associated infections from 2014 to 2023.

These findings indicate a steady decline in the number of publications concerning global coronary heart disease. The early years, particularly 2014, witnessed a striking number of publications, followed by a declining trend starting from 2016. This decline continued, reaching its peak in 2022. This trajectory signifies a diminishing attention and research focus on the development of coronary heart disease. The research focus in this context is related to the global progression of coronary heart disease. increasing trends about heart disease in 2014 to 2023.

### Co-occurrence Analysis Findings

From the data absorption in the Scopus database, several prominent terms emerged, especially "coronary heart disease," "mortality," "atherosclerosis," and "hypertension." The strong co-occurrence links between these terms indicate their interconnectedness and relevance within the research domain. These findings highlight mortality rates, blood vessel narrowing due to plaque accumulation, and high blood pressure in the context of coronary heart disease.

Furthermore, specific sub themes emerged from the co-occurrence analysis, such as "diabetes mellitus," "genetics," and "inflammation." These subthemes represent important areas of research focus for addressing coronary heart disease. Analysis of publications specifically related to coronary heart disease on a broader scale showed a significant decrease in the number of publications. Figure 2 presents the co-occurrence network of terms, highlighting the most frequently co-occurring terms in the literature.



connections between their nodes in the co-authorship network. Their collaborative endeavors have significantly contributed to advancing knowledge in this field. An analysis of global publications on coronary heart disease from 2014 to 2023 reveals the top five countries in terms of publication volume in this domain. Table 1 presents the top five countries along with their corresponding publication counts.

**Table 1.** Top five active countries publishing papers on coronary heart disease-associated in the Scopus database (2014-2023).

No	Country	Document
1	United States	535
2	United Kingdom	206
3	China	174
4	Japan	94
5	Swedens	87

These findings underscore the countries that have made substantial contributions to the literature on coronary heart disease. The United States emerges as a leading nation, with a substantial number of publications, followed by the United Kingdom, China, Japan, and Swedes. These countries demonstrate a strong research focus on the global development of coronary heart disease, which has contributed to the advancement of knowledge in this area. Their contributions through research publications have enriched our understanding of coronary heart disease and provided valuable insights into the implications of heart disease. Furthermore, these findings emphasize the global attention given to coronary heart disease-related issues and the collaborative efforts of researchers to address this critical health issue on a global scale.

Coronary heart disease poses a significant health concern for global epidemiology and understanding the research landscape in this area is crucial for guiding future studies and interventions. This bibliometric study aimed to analyze the publication trends and contributions in the field of coronary heart disease in global epidemiology using the Scopus database from 2014 to 2023.

The findings provide valuable insights into the research landscape, highlight research gaps, and identify areas for further investigation. The analysis revealed a notable increase in the number of publications related to coronary heart disease over the study period. This writing demonstrates a decreasing recognition

towards the significance of public health and the necessity for an evidence-based approach to prevent, diagnose, and treat infections within the global epidemiological framework.

The surge in publications related to epidemiology in global scale during the years 2014 to 2023 further reflects the profound impact of the pandemic on the global epidemiology community and the urgent need to address the unique challenges posed by the virus. The results also shed light on the top active countries in terms of publication output in the field. The United States, the United Kingdom, China, Japan, and Sweden emerged as the leading contributors, highlighting their research productivity and commitment to advancing knowledge in coronary heart disease.

These countries have established research networks, funding opportunities, and academic resources that facilitate research collaboration and knowledge exchange, enabling them to lead in this field<sup>19,20</sup>. It is worth noting that the presence of several countries in the top five active countries indicates the strong research focus on coronary heart disease in Global. While the findings demonstrate the overall growth in research on coronary heart disease, it is important to acknowledge.

## CONCLUSION

In conclusion, this bibliometric analysis focusing on coronary heart disease within the realm of global epidemiology has shed light on the increasing interest and research endeavors within this field. It is imperative that we strive to bridge existing research lacunae and nurture collaborative efforts within the scientific community, as these actions can play a pivotal role in enhancing the overall health and performance of humans worldwide.

## REFERENCES

- Bagaswoto, Hendry Purnasidha, Nahar Taufiq, and Budi Yuli Setianto. "A Simplified Risk Scoring System to Predict Mortality in Cardiovascular Intensive Care Unit." *Cardiology Research* 10, no. 4 (2019): 216–22. <https://doi.org/10.14740/cr884>.
- Bhatnagar, Prachi, Kremlin Wickramasinghe, Elizabeth Wilkins, and Nick Townsend. "Trends in the Epidemiology of Cardiovascular Disease in the UK." *Heart*. BMJ

---

<sup>19</sup> Salem Garfan et al., "Telehealth Utilization during the Covid-19 Pandemic: A Systematic Review," *Computers in Biology and Medicine* (Elsevier Ltd, 2021), <https://doi.org/10.1016/j.compbiomed.2021.104878>.

<sup>20</sup> Jun Hata and Yutaka Kiyohara, "Epidemiology of Stroke and Coronary Artery Disease in Asia," *Circulation Journal* 77, no. 8 (2013): 1923–32, <https://doi.org/10.1253/circj.CJ-13-0786>.

Publishing Group, 2016. <https://doi.org/10.1136/heartjnl-2016-309573>.

- Bozkurt, Biykem, Tariq Ahmad, Kevin M Alexander, William L Baker, Kelly Bosak, Khadijah Breathett, Gregg C Fonarow, et al. "Heart Failure Epidemiology and Outcomes Statistics: A Report of the Heart Failure Society of America." *Journal of Cardiac Failure* 29, no. 10 (2023): 1412–51. <https://doi.org/10.1016/j.cardfail.2023.07.006>.
- Garfan, Salem, A H Alamoodi, B B Zaidan, Mohammed Al-Zobbi, Rula A Hamid, Juan K Alwan, Ibraheem Y Y Ahmaro, et al. "Telehealth Utilization during the Covid-19 Pandemic: A Systematic Review." *Computers in Biology and Medicine*. Elsevier Ltd, 2021. <https://doi.org/10.1016/j.compbiomed.2021.104878>.
- Hata, Jun, and Yutaka Kiyohara. "Epidemiology of Stroke and Coronary Artery Disease in Asia." *Circulation Journal* 77, no. 8 (2013): 1923–32. <https://doi.org/10.1253/circj.CJ-13-0786>.
- Jumayanti, Anggi Lukman Wicaksana, and Eri Yanuar Akhmad Budi Sunaryo. "Kualitas Hidup Pasien Dengan Penyakit Kardiovaskular Di Yogyakarta." *Jurnal Kesehatan* 1 (2020): 1–12.
- Kitamura, Akihiko, Shinichi Sato, Masahiko Kiyama, Hironori Imano, Hiroyasu Iso, Takeo Okada, Tetsuya Ohira, et al. "From around the World The Akita-Osaka Study," 2008.
- Li, Min, Yingli Fan, Xiaowei Zhang, Wenshang Hou, and Zhenyu Tang. "Fruit and Vegetable Intake and Risk of Type 2 Diabetes Mellitus: Meta-Analysis of Prospective Cohort Studies." *BMJ Open* 4, no. 11 (2014). <https://doi.org/10.1136/bmjopen-2014>.
- Nichols, Melanie, Nick Townsend, Peter Scarborough, and Mike Rayner. "Cardiovascular Disease in Europe 2014: Epidemiological Update." *European Heart Journal*. Oxford University Press, 2014. <https://doi.org/10.1093/eurheartj/ehu378>.
- Ohira, Tetsuya, and Hiroyasu Iso. "Cardiovascular Disease Epidemiology in Asia - An Overview." *Circulation Journal* 77, no. 7 (2013): 1646–52. <https://doi.org/10.1253/circj.CJ-13-0702>.
- Praja, Rian Ka, and Azis Rohmansyah. "Bibliometric Analysis on Sports-Associated Infections in Athletes." *J. Anthr. Sport Phys. Educ* 7 (2023). <https://doi.org/10.26773/jaspe.230705>.
- Qothi, Ikhsanuddin, Muhamad Robi'ul Fuadi, and Agus Subagio. "Profile of Major Risk Factors in Acute Coronary Syndrome (ACS) at Pusat Pelayanan Jantung Terpadu (PPJT) Dr. Soetomo Public Hospital Surabaya Between the Period of January-December 2019," 2021.
- Ralapanawa, Udaya, and Ramiah Sivakanesan. "Epidemiology and the Magnitude of Coronary Artery Disease and Acute Coronary Syndrome: A Narrative Review." *Journal of Epidemiology and Global Health* 11, no. 2 (2021): 169–77. <https://doi.org/10.2991/JEGH.K.201217.001>.
- Roger, Véronique L, Susan A Weston, Yariv Gerber, Jill M Killian, Shannon M Dunlay,

- Allan S Jaffe, Malcolm R Bell, Jan Kors, Barbara P Yawn, and Steven J Jacobsen. "Trends in Incidence, Severity, and Outcome of Hospitalized Myocardial Infarction." *Circulation* 121, no. 7 (2010): 863–69. <https://doi.org/10.1161/CIRCULATIONAHA.109.897249>.
- Santosa, Winnie Nirmala, and Baharuddin Baharuddin. "Penyakit Jantung Koroner Dan Antioksidan." *KELUWIH: Jurnal Kesehatan Dan Kedokteran* 1, no. 2 (2020): 98–103. <https://doi.org/10.24123/kesdok.v1i2.2566>.
- Saputri, Melenia, and Sinta Ratna Dewi. "Potensi Interaksi Polifarmasi Pasien Jantung Koroner (PJK) Di Rumah Sakit I.A. Moeis Samarinda." *Jurnal Sains Dan Kesehatan* 5, no. 2 (2023): 109–14. <https://doi.org/10.25026/jsk.v5i2.1709>.
- Tampubolon, Lindawati Farida, Amnita Ginting, Florensia Ermasta Saragi Turnip, STIKes Santa Elisabeth Medan, Jl Bunga Terompet No, and Kec Medan Selayang. "Gambaran Faktor Yang Mempengaruhi Kejadian Penyakit Jantung Koroner (Pjk) Di Pusat Jantung Terpadu (PJT)," n.d. <http://journal.stikeskendal.ac.id/index.php/PSKM>.
- Yoon, Sung Sug (Sarah), Charles F Dillon, Kachi Illoh, and Margaret Carroll. "Trends in the Prevalence of Coronary Heart Disease in the U.S.: National Health and Nutrition Examination Survey, 2001–2012." *American Journal of Preventive Medicine* 51, no. 4 (2016): 437–45. <https://doi.org/10.1016/J.AMEPRE.2016.02.023>.
- Zebua, Rusdin, Pustakawan Uin, and Bonjol Padang. "Analisis Bibliometrika Dan Kolaborasi Pengarang Terhadap Artikel Penelitian Penyakit Jantung Koroner Di Indonesia Tahun 2013-2017 Menggunakan Database Online Proquest," 2018.