BIBLIOMETRIC ANALYSIS OF PUBLICATIONS ON HEPATITIS D VIRUS PUBLISHED IN 1984–2022

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Abstract

Background: Hepatitis D virus research has advanced in recent decades. In this study, we aim to quantitatively analyze the scientific data in the field of "hepatitis D virus" by using bibliometric analysis.

Methods: Research documents published in the Web of Science database between 1984 and 2022 were included in the study. The search keywords were "hepatitis D" or "hepatitis-D" or "HDV" or "hepatitis virus D." The full record and cited references of documents extracted were converted to a "bibtex" file as well. The R-Studio software's Bibliometrix package and Biblioshinny application are used to perform the bibliometric analysis.

Results: A total of 1530 publications written by 6042 authors were identified. Most of the publications were articles (62.81%). The number of published articles increased gradually, especially after 2008. The articles of the authors were mostly published in the United States, Germany, and China. The affiliation where the most studies were conducted was Hannover Medical School (8.82%). Also, the United States and Germany were found to be the main countries in the collaboration network. Mario Rizzetto was the author of the most published articles on HDV. The most frequently used words in the articles were "infection," "prevalence," and "b-virus."

Conclusion: Clinical and epidemiological studies on HDV were given more focus, while studies on treatment were less numerous. It can also be predicted that potent treatment options will increase more in the coming years, and the frequency of studies on this will increase.

Keywords: Bibliometrics, Hepatitis D, Periodicals as topic, Scholarly communication, Web of Science

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INTRODUCTION
Hepatitis, defined as inflammation of the liver tissue, can lead to chronic inflammation, fibrosis, cirrhosis, and hepatocellular carcinoma (HCC). Inflammation of the liver can be caused by several different factors: autoimmune disease, fatty liver disease, certain drugs, alcohol consumption, and viral infection [1]. The etiologic agents of viral hepatitis have only been identified in the last few decades. Almost all viral hepatitis is caused by five main viruses. These are the hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis E virus (HEV). Viral hepatitis infects millions of people each year; some of them could lead to HCC, liver cirrhosis, and death over many years [2-4]. The most common causes of liver cirrhosis, liver cancer, and death-related viral hepatitis are HBV and HCV. It is estimated that approximately 354 million people worldwide are infected with HBV or HCV [2].

The HDV was discovered after the discovery of a new nuclear antigen in patients with a severe form of chronic hepatitis B in the mid-1970s. In the report first published in 1977, this antigen, called the "delta antigen," was believed to be the hepatitis B antigen [5,6]. Three years later, experiments in chimpanzees demonstrated that hepatitis delta antigen (HDAg) is a structural component of an infectious pathogen that requires HBV for its life cycle [7]. HDV is recognized as a defective human ribonucleic acid (RNA) virus that requires the presence of hepatitis B surface antigen (HBsAg) for persistence and transmission [8,9]. Acute HDV infection occurs after the simultaneous ingestion of HDV and HBV (coinfection) or when carriers of HBsAg are superposed (superinfection) with HDV [8-10]. HDV is highly pathogenic. While only 2% of coinfection cases become chronic, it results in chronicity in more than 90% of superinfection cases. Particularly in HDV superinfection, pre-existing liver damage is exacerbated, leading to faster progression to cirrhosis in 70% to 80% of cases [11]. The number of HDV infections seems to have decreased since the 1980s, due to the successful worldwide HBV vaccination program [12].

Bibliometric analysis plays an active role in identifying articles and authors who have contributed to many scientific and medical fields [13]. Research on viral hepatitis has increased over the years. Bibliometric analysis can be used as a tool to analyze trends in these studies and help us identify gaps that can be addressed to prevent and control viral hepatitis. In our literature review (Google Scholar, Pubmed), we did not find any bibliometric analysis on HDV. In this study, we aim to quantitatively analyze the scientific data in the field of HDV by using bibliometric analysis.

MATERIALS AND METHODS
In the first step, documents published on HDV were extracted from the Web of Science (WOS) database (Clarivate Analytics, Philadelphia, PA, USA) which is one of the most popular platforms used for searching the scientific literature. The second step was to conduct the bibliometric analysis using the Bibliometrix package and Biblioshiny application included in the R-Studio software. The Bibliometrix application contains the following sections: overview, sources, authors, documents, clustering, conceptual structure, and intellectual structure.

The following search strategy was used.

Document types: All (Article, meeting abstract, review, letter, editorial material, proceeding papers, and other type publications).


Indexes: The data used in this study were retrieved from the WOS Core Collection database (all indexes) on October 5, 2022.

Editions: All

Data source: The keywords 'hepatitis D' or "hepatitis-D" or "HDV" or "hepatitis virus D" were used in our search. On October 5, 2022, all electronic searches were completed. English was used for search.

Data collection: The WOS database was used for evaluating the bibliographic records. Authors, publication years, published journals, institution, country, frequency of citation, words, and collaboration networks were all retrieved for each publication. These were used to investigate the worldwide knowledge domain HDV research development patterns. As a measure of publishing impact, the Hirsch (H) index was used.

RESULTS

Descriptive analysis
Summary statistics of the data retrieved from the WOS database are given in Table 1. A total of 1530 publications have been conducted by 6042 authors between 1984 and 2022. The number of documents with a single author was 120 (7.84%). The publications have been published in 453 different sources (journals, books, etc.). Moreover, the annual growth rate was found to be 12.03 percent.

A total of 1530 publications were identified as follows: 961 (62.81%) were articles; 200 (13.07%) were meeting abstracts; 165 (10.78%) were reviewed; 55 (3.59%) were letters; 44 (2.88%) were editorial materials; 43 (2.81%) were articles; proceeding papers; and 62 (4.05%) were other types of publications (Figure 1a). According to WOS categories, of the publications, 586 (38.33%) were in the category of "Gastroenterology & Hepatology," 155...
(10.14%) were in the category of "Virology," 141 (9.22%) were in the category of "Medicine & General & Internal," and 648 (42.31%) were in the other category (Figure 1b). The languages of 1434 (93.73%) publications were mostly English. Also, German (n=33, 2.16%), French (n=17, 1.11%), and Turkish (n=17, 1.11%), and the remaining part was other languages (Figure 1c).

Table 1. Summary statistics of the retrieved documents

<table>
<thead>
<tr>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAIN INFORMATION ABOUT DATA</strong></td>
<td></td>
</tr>
<tr>
<td>Timespan</td>
<td>1984-2022</td>
</tr>
<tr>
<td>Sources (journals, books, etc.)</td>
<td>453</td>
</tr>
<tr>
<td>Documents</td>
<td>1530</td>
</tr>
<tr>
<td>Annual Growth Rate %</td>
<td>12.03</td>
</tr>
<tr>
<td>Document Average Age</td>
<td>12.5</td>
</tr>
<tr>
<td>Average citations per document</td>
<td>18.76</td>
</tr>
<tr>
<td>References</td>
<td>25149</td>
</tr>
<tr>
<td><strong>DOCUMENT CONTENTS</strong></td>
<td></td>
</tr>
<tr>
<td>Keywords Plus (ID)</td>
<td>2071</td>
</tr>
<tr>
<td>Author's Keywords (DE)</td>
<td>1856</td>
</tr>
<tr>
<td><strong>AUTHORS</strong></td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>6042</td>
</tr>
<tr>
<td>Authors of single-authored document</td>
<td>84</td>
</tr>
<tr>
<td><strong>AUTHORS COLLABORATION</strong></td>
<td></td>
</tr>
<tr>
<td>Single-authored document</td>
<td>120</td>
</tr>
<tr>
<td>Co-Authors per document</td>
<td>6.08</td>
</tr>
<tr>
<td>International co-authorships %</td>
<td>21.96</td>
</tr>
</tbody>
</table>

Figure 2 depicts a bar plot of the number of publications and the mean number of total citations per article (MeanTCperArt) by year. It can be seen that most documents have been published in 2021, with 137 documents representing 8.95% of the total. This is followed by the 2020 year with 98 documents and the 2017 year with 81 documents. The fewest articles (1) have been published in 1984. The number of articles published between 2008 and 2021 has gradually increased. 50% of the articles have been published since 2013. The years with the highest Mean TC per Art values were 2005 (54.65), 2012 (45.47), and 2003 (41.71). The years with the lowest MeanTCperArt values were 2021 (3.47), 1990 (6.19), and 2020 (6.38), respectively (2022 was excluded).

**Most influential sources**
The top 10 relevant and locally cited sources were given in Table 2. The two most important journals in the field of HDV were determined to be the *Journal of Hepatology* and *Hepatology*. 123 (8.04%) of the articles on HDV have been published in the *Journal of Hepatology*, 121 (7.91%) in the *Journal of Hepatology*, 51 (3.33%) in the *Journal of Medical Virology*, 50 (3.27%) in the *Journal of Viral Hepatitis*, and 33 (2.16%) in the *Journal of Hepatitis Monthly*. 499 (32.6%) of the articles have been published in the first 10 journals. The articles have been published in 453 different journals. The journal with the highest H-index among these journals was *Hepatology*. There were 4852 (9.2%) citations to the *Journal of Hepatology*, 3731 (7.07%) citations to the *Journal of Hepatology*, and 2843 (5.39%) citations to the *Journal of Virology*. 20301 (38.49%) citations were made to the first 10 journals.

Table 2. Top 10 relevant and local cited sources

<table>
<thead>
<tr>
<th>Sources</th>
<th>H-Index</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal of Hepatology</td>
<td>28</td>
<td>123</td>
<td>8.04</td>
</tr>
<tr>
<td>Hepatology</td>
<td>32</td>
<td>121</td>
<td>7.91</td>
</tr>
<tr>
<td>Journal of Medical Virology</td>
<td>17</td>
<td>51</td>
<td>3.33</td>
</tr>
<tr>
<td>Journal of Viral Hepatitis</td>
<td>19</td>
<td>50</td>
<td>3.27</td>
</tr>
<tr>
<td>Hepatitis Monthly</td>
<td>11</td>
<td>33</td>
<td>2.16</td>
</tr>
<tr>
<td>Liver International</td>
<td>12</td>
<td>28</td>
<td>1.83</td>
</tr>
<tr>
<td>Journal of Gastroenterology and Hepatology</td>
<td>11</td>
<td>25</td>
<td>1.63</td>
</tr>
<tr>
<td>Viruses-Basel</td>
<td>6</td>
<td>24</td>
<td>1.57</td>
</tr>
<tr>
<td>World Journal of Gastroenterology</td>
<td>10</td>
<td>24</td>
<td>1.57</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>11</td>
<td>20</td>
<td>1.31</td>
</tr>
</tbody>
</table>

Most Local Cited Sources

<table>
<thead>
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<th>Sources</th>
<th>H-Index</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatology</td>
<td>32</td>
<td>4852</td>
<td>9.2</td>
</tr>
<tr>
<td>Journal of Hepatology</td>
<td>28</td>
<td>3731</td>
<td>7.07</td>
</tr>
<tr>
<td>Journal of Virology</td>
<td>7</td>
<td>2843</td>
<td>5.39</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>11</td>
<td>2071</td>
<td>3.93</td>
</tr>
<tr>
<td>Lancet</td>
<td>5</td>
<td>1429</td>
<td>2.71</td>
</tr>
<tr>
<td>Journal of Medical Virology</td>
<td>17</td>
<td>1287</td>
<td>2.44</td>
</tr>
<tr>
<td>New England Journal of Medicine</td>
<td>-</td>
<td>1148</td>
<td>2.18</td>
</tr>
<tr>
<td>Journal of Infectious Diseases</td>
<td>14</td>
<td>1062</td>
<td>2.01</td>
</tr>
<tr>
<td>Journal of Viral Hepatitis</td>
<td>19</td>
<td>986</td>
<td>1.87</td>
</tr>
<tr>
<td>Gut</td>
<td>8</td>
<td>892</td>
<td>1.69</td>
</tr>
</tbody>
</table>
Most influential authors
A total of 6402 authors contributed to 1530 publications, the subject of which was HDV. Mario Rizzetto conducted 68 (4.44%) articles on HDV; Heiner Wedemeyer conducted 47 (3.07%) articles; and Jaw-Ching WU conducted 46 (3.01%) articles. The first 10 authors have published 380 of 1530 (24.84%) articles. The most locally cited author was Mario Rizzetto, with 726 (1.58%) citations. 3985 of 46072 (8.65%) citations have been made to the articles of the top 10 authors. Mario Rizzetto had the highest H-index (26) of any author among the most influential in the HDV domain. This author was followed by Jaw-Ching Wu and Michael P. Manns, both of whom had an H-index of 20.


Most influential regions and articles
Figure 3 denotes the most relevant affiliations, the corresponding author’s country, and the most cited countries relating to the articles on HDV. 135 of 1530 (8.82%) articles have been conducted by Hannover Medical School (Germany), 89 (5.81%) by National Yang-Ming University (Taiwan), and 89 (5.81%) by the University of Turin (Italy). A total of 664 (44.40%) articles on HDV have been published by authors whose affiliations are among the first 10 affiliations (Figure 3a). The 171 (11.18%) articles have been published by the authors in the USA, Germany, China, and Italy, respectively. 1096 (71.63%) articles have been conducted by the authors in the countries given in Figure 3b. The most cited countries about the subject of HDV were China with 4546 citations (16.07%), Italy with 4545 (16.07%) citations, Germany with 3944 (13.94%) citations, and the USA with 3655 (12.92%) citations (Figure 3c).

Most frequent words and co-occurrence network
Figure 4 denotes the most frequent words by the number of occurrences and percentage. A total of 2070 of the most frequent words were found in the field of HDV. The most frequent word in the articles was found to be "infection," with 270 occurrences and a 3% frequency. This was respectively followed by the "prevalence" (186, 2.067%) and the "b-virus" (157, 1.744%). The occurrence of the “delta virus” was 146 (1.622%).

Figure 5 shows the co-occurrence network of the words. According to Figure 5, articles are grouped into three clusters according to the co-occurrences of the words. Keywords with the same color belong to the same subject clusters in studies with hepatitis D. In Cluster 1; it was observed that the keywords related to epidemiological studies such as ‘infection’, ‘prevalence’, ‘b-virus’, and ‘epidemiology’ were mostly repeated. In Cluster 2; the keywords related to virology studies such as ‘delta-virus’, ‘replication’, ‘antigen’, ‘liver’, and ‘RNA’ were mostly repeated. In Cluster 3; the keywords related to hepatitis D treatment studies, such as ‘therapy’, ‘chronic delta hepatitis’, ‘interferon’, ‘efficacy’, and ‘lamivudine mostly occurred keywords.

Collaboration network
Figure 6 shows the connections between the authors and countries publishing the articles on the HDV. The biggest collaboration was among 12 authors, including Rizzetto, Smedile, Farci, Negro, etc. The second-biggest network included 11 authors such as Wedemeyer, Manns, Yurdaydin, etc. The third biggest collaboration was among the authors, who were Gleen, Kleiner, Heller, Koh, and Dahari. The other network included the authors, who were Roggendorf and Buti Esteban. According to country, the United States and Germany were discovered to be the most important countries in the network. The biggest collaboration network included 17 countries. These countries were found to be Germany, Italy, Belgium, Greece, Romania, Mongolia, Pakistan, Moldova, New Zealand, Austria, Turkey, Brazil, the Netherlands, Sweden, Iran, Poland, and Vietnam. The second-biggest network contained 14 countries, which were the USA, Australia, Thailand, Peru, Switzerland, Spain, France, China, Russia, Nigeria, Cameroon, Canada, Israel, and the United Kingdom. South Africa, Malawi, and India were the countries included in the third-largest network.

DISCUSSION
The evaluation of research output has grown in importance for the scientific research community throughout time, and bibliometric analysis is now a widely utilized tool in the field of medicine. Despite not being designed for this purpose, bibliometric methods are routinely used to assess the work of specific researchers and to establish academic ranking, advancement, remuneration, and research funding. The data obtained as a result of bibliometric analyses can provide the following scientific outputs to the researchers. ‘What are the most important keywords, on which topics have articles been published and not published, and which publications of which countries/institutions/authors have been mostly cited?
What are the most popular topics with the most citations? Which journals have published the most publications on this subject?, etc." [15-20]. For this reasons, since our study is the first bibliometric analysis study published on HDV, it can give ideas to the relevant field researchers.

For quantitative scientometrics and bibliometrics research, one option is to utilize Bibliometrix, the comprehensive science mapping analysis tool. It offers a number of functions for importing bibliographic data from databases such as Scopus, Clarivate Analytics Web of Science, Digital Science Dimensions, Cochrane Library, Lens, and PubMed, performing bibliometric analysis, and creating networks for co-citation, coupling, scientific collaboration, and keyword analysis [21,22]. Despite the fact that many HDV studies have been conducted, we found no bibliometric analysis in our review of the literature. We aimed to conduct a bibliometric analysis that will contribute to the scientific world by creating a general perspective on HDV. In this study, published literature on HDV between 1984 and 2022 was extracted from the WOS database, and overviews, sources, authors, documents, clustering, conceptual structure, and intellectual structure were examined. In this period, a total of 1530 publications written by 6042 authors were identified. 120 of the studies (7.84%) had a single author. It was observed that the publications were published by 453 different sources. Most of the publications were articles (62.81%) and meeting abstracts (13.07%). It was determined that the majority of the publications were published in English (93.3%). The number of published articles increased gradually, especially after 2008, and almost 50% of the articles were published after 2013. HBV and HCV infections are getting more attention due to their high global prevalence and wider and more effective treatment modalities. Although HDV is seen less frequently than the other two viral hepatitis, studies have accelerated in recent years, and it is expected to increase more in the future due to the fact that the treatment is limited to interferon and the comorbidity and mortality associated with the disease are high. It can be foreseen that there will be more studies to be done, especially on the treatment of HDV, in the future.

Hepatitis D is a major health problem worldwide. Although the prevalence of HDV infection on a global scale is not fully known, recent meta-analyses show that approximately 15–60 million people worldwide are exposed to HDV, and its prevalence varies in different geographic regions [12,23-25]. HDV epidemiology has changed continuously over the past decade after the advent of hepatitis B vaccination [26]. In Europe, HDV remains endemic in Moldova and Romania [26-28]. In the USA, HDV infection is not perceived as a major problem. In the NHANES study covering the years 1999-2012, only 0.02% had a positive anti-HD value [26,29]. HDV is declining in Saudi Arabia, Northern Africa, the Caucasus, and Israel. In Turkey and Iran, which have historically been endemic for HDV, the prevalence of the infection has decreased. In Asia, the rate of HDV is high in the central part of the continent, especially in Mongolia, Uzbekistan, Tajikistan, and Kyrgyzstan [26]. HDV appears to play a minor role in China, India, and Indonesia, although these countries bear a large part of the global HBV burden [26]. The authors' geographical locations can provide information about disease distribution [29]. According to our analysis, it was determined that the articles of the authors were mostly published in the USA, Germany, China, and Italy. Hannover Medical School (Germany) (8.82%), National Yang-Ming University (Taiwan) (5.81%), and University of Turin (Italy) (5.81%) were the affiliations where the majority of studies were conducted. Many studies are carried out by many countries and authors in international collaboration. In our study, the USA and Germany were found to be the main countries in the network. The biggest collaboration network included Germany, Italy, Belgium, Greece, Romania, Mongolia, Pakistan, Moldova, New Zealand, Austria, Turkey, Brazil, the Netherlands, Sweden, Iran, Poland, and Vietnam. The same condition is acceptable for authors. Mario RIZZETTO (the University of Turin, Department of Medical Sciences, Italy), Heiner Wedemeyer (Hannover Medical School, Department of Gastroenterology, Hepatology, and Endocrinology, Germany), and Jaw-Ching WU (National Yang-Ming University School of Medicine, Taipei, Taiwan) were the authors with the most published documents on HDV. Mario Rizzetto appears to be one of the 12 authors with the biggest collaboration network, and Heiner Wedemeyer has the second-biggest collaboration network.

In this study, the most important journals in the field of HDV were determined to be the Journal of Hepatology (n = 123 articles, 8.04%); Hepatology (n = 121 articles, 7.91%); and the Journal of Medical Virology (n = 50 articles, 3.27%). In a bibliometric analysis of chronic hepatitis B treatment-related research, it has been shown that the Journal of Hepatology, Hepatology, and Chinese Journal of Hepatology have the highest number of articles published [30]. In a bibliometric analysis of HAV, the most attractive journals were Vaccine, Hepatology, and the Journal of Medical Virology [31]. Another bibliometric analysis associated with HEV conducted by T. Ahmad et al [32] reported that the Journal of General Virology, Emerging Infectious Diseases, and Journal of Clinical Microbiology were the leading journals.
The most frequently used words in the articles were "infection," "prevalence," and "b-virus." It shows that the studies are mostly carried out on clinical and epidemiological grounds related to HDV. The low frequency of keywords related to treatment is an important finding. Chronic hepatitis D is a difficult disease to treat. Long-term administration of standard interferon-a (IFNa) is the only approved treatment option in many countries [6]. Studies continue on new treatment options that can be used in the treatment of chronic HDV, such as nucleic acid polymers (REP 2139-Ca), farnesyl-transferase inhibitors (Lonafarnib), and bulverotide (formerly Myrcludex B) [33]. It can be foreseen that more studies will be published in the near future, especially on treatment modalities.

CONCLUSION
In conclusion, this study takes a bibliometric perspective on scope, trends, publication styles, and the contributions of countries and authors’ studies on hepatitis D since 1984. It is seen that there has been a significant increase in the number of published articles, especially since 2008. Especially considering the occurrence and percentage of keywords, it can be predicted that clinical and epidemiological studies on hepatitis D will receive more focus, and studies on treatment will receive less. Also, it can be said that the authors' articles are mostly published in the USA, Germany, China, and Italy, but since many studies are carried out in international cooperation, they may not give a clear idea about the distribution of the disease in that region. Considering the potential negative effects of HDV, it can be predicted that potent treatment options will increase more in the coming years, and the frequency of studies on this will increase.

LIMITATIONS and ADVANTAGES
The data extraction method has limitations on the scope of the current work. Due to the use of the terms bibliometrics, informetrics, and scientometrics, we specifically target publications where the authors acknowledge that their work is a component of bibliometric research. As a result, the development of our data collection technique was guided by our goal of capturing the academic landscape of the use of those keywords across all branches of research. We do not want to imply that the bibliometrics field is defined by these three words. It might be difficult to describe an academic field in a search query. These techniques depend on having a ground truth dataset to compare their results to and on choosing a precision/recall trade-off. We used a single database by searching selected keywords and used only one scientometric technique, which can lead to bias.

AUTHOR CONTRIBUTION
Concept: Mehmet Çelik, Mehmet Reşat Ceylan and Nevin Güler Dinçer, Sevil Alkan
Design: Nevin Güler Dinçer and Yusuf Arslan, Sevil Alkan
Data collection and processing: Nevin Güler Dinçer, Yusuf Arslan
Analysis and interpretation: Mehmet Çelik, Mehmet Reşat Ceylan and Yusuf Arslan
Literature review and writing: Mehmet Çelik, Mehmet Reşat Ceylan, Sevil Alkan and Yusuf Arslan
Critical review: Mehmet Çelik and Mehmet Reşat Ceylan, Sevil Alkan

CONFLICT OF INTERESTS
None

Figure 1. Document information in the field of hepatitis D virus
(a)Document types
(b) Web of science category
(c) Languages
Figure 2. Distribution of the publications by years

(a) Number of articles by year

(b) Mean total citation per article by article.

Figure 3. Top 10 affiliations, authors and their countries

(a) Most relevant affiliations

(b) Corresponding author’s country
Figure 4. Most frequent words

- (a) Occurrences
- (b) Percentage

Figure 5. Co-occurrence network

- (a) Cluster 1
- (b) Cluster 2
- (c) Cluster 3
Figure 6. Collaboration network. The circles with the same color represent the connected authors. The lines between the circles represent the collaborations. The thicker the lines, the stronger the collaboration. Moreover, the larger the circle’s name in the figures, the more articles the author or country has:

(a) By author
(b) By country
REFERENCES


31


1984-2022 годы включены исследовательские документы, из которых не мению исследования Д гепатит вирусы. Были забыты из публикаций документы. Были несколько методов: для поиска были "D гепатит вирусы" или "D гепатит" немецкого "HDV" немецкого "D гепатит-вирус" был. Анализируется куративный толстой жабысы мен материал исследования "Bibtex" файла. Библиометрический анализ включает "HDV" немецкого "D гепатит вирусы".

Заключение: последние десятилетия исследования вируса гепатита США и Германия являются основными странами в сети сотрудничества. Марио Ризетто был автором анализа "D гепатит вирусы".

Ключевые слова: Библиометрия, вирус гепатита D, Публикации

Введение: за последние десятилетия исследования вируса гепатита Д развивались верно. В этом исследовании мы стремимся количественно проанализировать научные данные в области "вирус гепатита D" с помощью библиометрического анализа.

Материалы и методы: в исследование были включены исследовательские документы, опубликованные в базе данных Web of Science в период с 1984 по 2022 год. Ключевыми словами для поиска были "генерит D", или "генерит-D", или "HDV", или "вирус гепатита D". Полная запись и цитируемые ссылки извлечен из документов были преобразованы в файл "bibtex". Для выполнения библиометрического анализа использовался пакет Bibliometrix программного обеспечения R-Studio и приложение Biblioshiny.

Результаты: выявлено 1530 публикаций, написанных 6400 авторами. Большинство публикаций состоят из статьи (62,81%). Количество публикуемых статей постепенно увеличивалось, особенно после 2008 г. В этом, были это работы авторов из США, Германии и Китая. Больше всего исследований было проведено Ганноверской медицинской школой (8,82%). Было установлено, что США и Германия являются основными странами в сети сотрудничества. Марио Ризетто был автором самых публикуемых статей о HDV. Наиболее часто в статьях использовались слова "инфекция", "распространение" и "b-вирус".

Заключение: клиническим и эпидемиологическим исследованиям HDV уделялось больше внимания, чем исследованиям о лечении. Можно предположить, что в ближайшие годы появится больше вариантов сильнодействующего лечения, а частота исследований по этому вопросу будет увеличиваться.

Ключевые слова: Библиометрия, Вирус гепатита D, Публикации

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