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Bibliographic Analysis of Articles on Laparoscopic Hysterectomy in The Field of Obstetrics and Gynecology

Kadın Hastalıkları ve Doğum Araştırma Alanında Laparoskopik Histerektomi ile İlgili Makalelerinin Bibliografik Analizi

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Abstract

Aim: This bibliometric study aimed to analyze published articles in the field of laparoscopic hysterectomy in order to identify their characteristics and trends.

Material and Method: The analysis covered all studies that had been published on laparoscopic hysterectomy that were published between 1992 and December 31, 2021. Bibliometric data was gathered from the Web of Science database, and VOSviewer software was used to construct bibliometric diagrams.

Results: A total of 993 articles according to the search criteria. 12.79% of the articles were published as open access and 96.375% of them were in English. Since 2010, 57% of articles have been published.These articles had an h-index of 70, a total of 23538 citations, and an average of 23.7 citations per article. Although the number of publications about laparoscopic hysterectomy changes from year to year, it peaked in 2015 (number of publications was 59) and it had the highest citation numbers (n=1800) in 2021. 3448 authors contributed to the publication of scholarly works on LH. Prof. Fabio Ghezzi from the University of Insubria (Italy) was the most published author on LH with 25 articles. Prof. Fabio Ghezzi's articles on LH were cited 735 times (29.4 per article). The majority of the articles were published by affiliates in Italy and the United States.

Conclusions: This study represents the first bibliometric analysis of laparoscopic hysterectomy. Laparoscopic hysterectomy research has declined after 2021. This situation; It may have resulted from the extraordinary burden placed on the healthcare system by the COVID-19 pandemic. Developing nations should think about increasing research funding to produce substantial research that can serve as the foundation for locally applicable, evidence-based laparoscopic hysterectomy interventions.

Keywords: Bibliometrics, citation analysis, laparoscopic hysterectomy, obstetrics

Öz

Amaç: Bu bibliyometrik çalışma, laparoskopik histerektomi alanında yayınlanmış makalelerin özelliklerini ve eğilimlerini belirlemek amacıyla analiz etmeyi amaçlamaktadır.

Gereç ve Yöntem: Analiz, 1992 ile 31 Aralık 2021 arasında yayınlanan laparoskopik histerektomi (LH) ile ilgili yayınlanmış tüm çalışmaları kapsıyordu. Bibliyometrik veriler Web of Science veri tabanından toplandı ve bibliyometrik diyagramlar oluşturmak için VOSviewer yazılımı kullanıldı.

Bulgular: Arama kriterlerine göre toplam 993 makale sağlandı. Makalelerin %12,79'u açık erişim olarak yayınlandı ve %96,375'i İngilizce idi. Makalelerin %57'si 2010 yılından bu yana yayınlanmıştır. Bu makalelerin h-index'i 70, toplam 23538 atıf ve makale başına ortalama 23,7 atıf vardı. LH ile ilgili yayın sayısı yıldan yıla değişmekle birlikte 2015 yılında zirve yapmış (yayın sayısı 59) ve en yüksek atıf sayısına (n=1800) 2021 yılında sahip olmuştur. 3448 yazar bilimsel çalışmaların yayınlanmasına katkıda bulunmuştur. LH'de. Insubria Üniversitesi'nden (İtalya) Prof. Fabio Ghezzi, 25 makale ile LH konusunda en çok yayın yapan yazar olmuştur. Prof. Fabio Ghezzi'nin LH ile ilgili makalelerine 735 kez (makale başına 29,4) atıf yapıldı. Makalelerin çoğu İtalya ve Amerika Birleşik Devletleri'ndeki bağlı kuruluşlar tarafından yayınlandı.

Sonuç: Bu çalışma, laparoskopik histerektominin ilk bibliyometrik analizini temsil etmektedir. Laparoskopik histerektomi araştırmaları 2021 yılından sonra azalmıştır. Bu durum COVID-19 pandemisinin sağlık sistemine bindirdiği olağanüstü yükten kaynaklanmış olabilir. Gelişmekte olan ülkeler, yerel olarak uygulanabilir, kanıta dayalı laparoskopik histerektomi müdahaleleri için temel oluşturabilecek önemli araştırmalar üretmek için araştırma fonlarını artırmayı düşünmelidir.

Anahtar Kelimeler: Bibliyometrik, atıf analizi, laparoskopik histerektomi, doğum

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INTRODUCTION

After Caesarean sections, hysterectomy is the most common gynecological procedure, and laparoscopic access to uterus removal is one of the modern techniques demonstrating a moderate but constant rise over time.[1] Recently, laparoscopic hysterectomy (LH) techniques have grown. This technique was initially used as a diagnostic tool for infertile women. Later, as technology advanced, it was utilized to do surgery on a tiny area of the ovaries and fallopian tubes. Today, it is believed that every gynecological procedure can be carried out laparoscopically.[2]

The following factors are debatable when it comes to LH indications and contraindications: malignant gynecological tumors, uterine size, and high body mass index. When endometrial, cervical, and ovarian cancer are in the early stages the LH technique may be an option.[1] As long as adequate expertise has been gathered and the technical specifics at different phases of the operation are properly adhered to, the LH technique is safe and practical for general gynecological surgical treatment.[3]

Annual worldwide hysterectomies done laparoscopically have significantly grown since the first publication on LH in 1989.[4] LH now accounts for up to 15% of all hysterectomies carried out in the United States of America (USA), indicating that the use of laparoscopy for all or a portion of hysterectomy has gained widespread acceptance. Laparoscopic hysterectomy is clearly associated with a shorter hospital stay and a quicker recovery time than laparotomy, according to a recent Cochrane analysis. Regarding the frequency of pelvic support disorders or sexual function, there is no research to suggest that a supracervical hysterectomy is preferable to a total hysterectomy.[5]

A bibliometric analysis can help identify influential articles that have influenced medical practice and spawned new research ideas.[6-13]

In the topic of obstetrics and gynecology, several bibliometric studies have been examined.[14-19] On the other hand, LH has not been the subject of a comparable bibliometric study. Thus, we desired to evaluate the evolution of the number of publications and citations over time, to identify the most prolific countries, researchers, and journals, and to lead future scientific research.

MATERIAL AND METHOD

Bibliometric Methodology

We identified the LH publications using the Web of Science Core Collection. The Web of Science Core Collection includes the Science Citation Index Expanded (SCIE) as well as other citation indexes and covers articles published from 1970 to 2022.[20] We used 1992 to December 2021 as the timespan and SCIE as the Wos index. We only retrieved the articles from the obstetric and gynecology research area.

In the title, the keyword "laparoscopic hysterectomy" was utilized as a term for database searching. The Vosviewer (Version 1.6.14) program was additionally employed to display data bibliometric linkages and mapping. The quantity of publications, the typical number of citations per article, and the H-index were examined and visualized using Microsoft Excel 2016. In the meantime, the images and tables were made using Microsoft Excel 2016.

Documents published in 2022 were not included in the study as the year was still running.

Summary of the search criteria: Results for laparoscopic hysterectomy (Title) and 2022 (Exclude – Publication Years) and 1991 or 1990 or 1989 or 1982 (Exclude – Publication Years) and Science Citation Index Expanded (SCI-EXPANDED) (Web of Science Index) and Obstetrics Gynecology (Web of Science Categories) and Article (Document Types)

RESULTS

General Characteristics and Global Productivity

On September 1, 2022, articles were queried from the Wos Core Collection's SCIE index. A total of 2252 documents were discovered, and we then narrowed the search results to original articles only from obstetric and gynecology research area. We found a total of 993 articles according to the search criteria. 12.79% of the articles were published as open access and 96.375% of them were in English. 57% of the articles published since 2010.

These articles had a Hirsch (h)-index of 70, a total of 23538 citations, and an average of 23.7 citations per article. Although the number of publications about LH changes from year to year, it peaked in 2015 (number of publications was 59) and it had the highest citation numbers (n=1800) in 2021 (**Figure 1**). The published articles were evaluated in the WoS database for country-base productivity. We discovered that the most productive country, with 289 articles, was the USA, and 51 countries contributed to the LH literature. In other words, the USA, Italy, Germany, South Korea, Australia, France, Taiwan, Turkey, England, and China were the top leading countries in the ranking of mostly publishing countries on LH, and the majority of the articles included in our analysis were published in America and Europe (**Figure 2**).

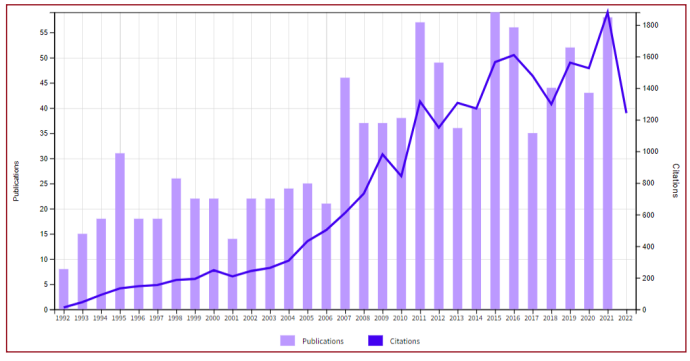

Figure 1. Graph of laparoscopic hysterectomy publications and citations since 1992

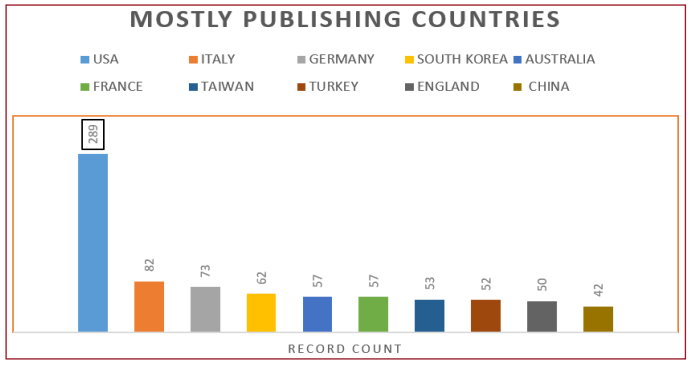

Figure 2. The top ten publishing country rankings on laparoscopic hysterectomy

Authors' and Institutions' Productivity and funding agencies

Our findings show that throughout the research period, 3448 authors contributed to the publication of scholarly works on LH. Prof. Fabio Ghezzi from the University of Insubria (Italy) was the most published author on LH with 25 articles. Prof. Fabio Ghezzi's articles on LH were cited 735 times (29.4 per article). Most of the articles were published from affiliations located in Italy and the USA (**Table 1**).

Table 1. The list of mostly publishing affiliations on laparoscopic hysterectomy.

Affiliations, country	n	%
University of Insubria, Italy	29	2.920
Udice French Research Universities, France	28	2.820
Harvard University, USA	24	2.417
Assistance Publique–Hôpitaux de Paris, France	23	2.316
The University of Texas System, USA	22	2.216
The Linkou Chang Gung Memorial Hospital, Taiwan	21	2.115
Catholic University of the Sacred Heart, Italy	18	1.813
La Fondazione Policlinico Universitario Agostino Gemelli, Italy	18	1.813
Brigham and Women's Hospital, USA	16	1.611
The Cleveland Clinic Foundation, USA	16	1.611

*Showing 10 out of 1.130 entries:8 record(s) (0.806%) do not contain data in the field being analyzed

The United States Department of Health and Human Services was the main funding agency of the LH topic's articles (**Table 2**).

Table 2. The leading funding agencies of laparoscopic hysterectomy research.

Funding Agencies	n	%
United States Department of Health Human Services	29	2.920
National Institutes of Health	28	2.820
National Cancer Institute	14	1.410
National Natural Science Foundation of Guangdong Province	5	0.504
National Science And Technology Support Program of China	5	0.504
Eunice Kennedy Shriver National Institute of Child Health Human Development	5	0.504
National Center For Advancing Translational Sciences	5	0.504
National Natural Science Foundation of China	4	0.403
Science and Technology Plan of Guangzhou	4	0.403
Ethicon Endo Surgery Inc	3	0.302

*Showing 10 out of 181 entries; 862 record(s) (86.808%) do not contain data in the field being analyzed

Journals

The LH articles were mostly (n=189,19.033%) published in the Journal of Minimally Invasive Gynecology journal and 52 different journals published the LH articles (**Table 3**).

Table 3. The summary of the mostly publishing journals on laparoscopic hysterectomy

Journals	n	%	Journal Impact Factor ™ (five year)
The Journal of Minimally Invasive Gynecology	189	19.033	3.935
The Journal of the American Association of Gynecologic Laparoscopists	74	7.452	-
Archives of Gynecology and Obstetrics	65	6.546	2.804
Gynecologic Oncology	55	5.539	5.696
The European Journal of Obstetrics & Gynecology and Reproductive Biology	52	5.237	2.778
Obstetrics & Gynecology	46	4.632	7.767
American Journal of Obstetrics & Gynecology	43	4.330	9.491
The International Journal of Gynecological Cancer	39	3.927	
The Australian and New Zealand Journal of Obstetrics and Gynaecology	32	3.223	3.622
Acta Obstetricia et Gynecologica Scandinavica	28	2.820	4.334

Showing 10 out of 52 entries

A search on the Medline (Pubmed) database with the same keywords in the same timeframe yielded 5964 articles. Similarly, most of the articles on LH are published in the Journal of Minimally Invasive Gynecology (928 publications) (**Table 4**). But the Pubmed database has some limitations, such as the publications can not be divided into research area subgroups.

Table 4. The list of mostly publishing journals and citations according to Pubmed on laparoscopic hysterectomy between 1992-2021.

Name	Publications	Citations
Journal of Minimally Invasive Gynecology	928	17507
Gynecologic Oncology	210	12713
Obstetrics and Gynecology	185	10504
American Journal of Obstetrics and Gynecology	170	7378
JSLS Journal of the Society of Laparoscopic & Robotic Surgeons	165	3588
European Journal of Obstetrics & Gynecology and Reproductive Biology	150	3339
Archives of Gynecology and Obstetrics	131	2171
International Journal of Gynecological Cancer	128	3139
International Urogynecology Journal	112	2089
BJOG An International Journal of Obstetrics & Gynaecology	90	3865

VosViewer mapping

The average number of authors per paper over the research period was 0.287 (0.035) (standard error of the mean). Using VOSviewer, we generated a graphical representation of the network mapping of co-authorship between countries in **Figure 3**.

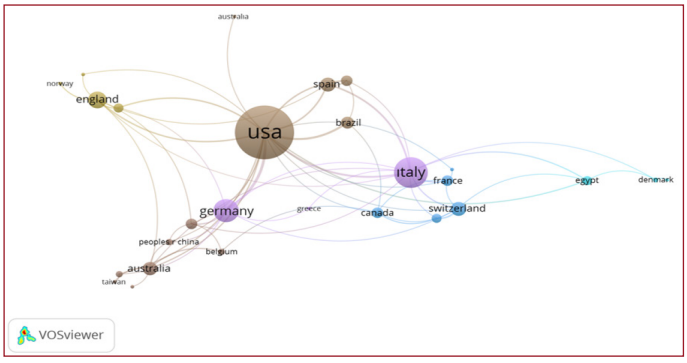

Figure 3. Co-authorship analysis among countries

International cooperation was defined as papers co-authored by authors from more than one country. **Figure 4** depicts the international collaborative network map. Using the VOS viewer technique, international collaboration analysis for active countries with at least one document revealed clusters of international collaboration. Lines connecting countries indicate cooperation. Stronger cooperation is indicated by thicker lines. Countries represented by larger circle or letter sizes have a higher level of international collaboration. The following countries are active in all world regions: the USA, Italy, France, South Korea, and Germany (**Figure 4**).

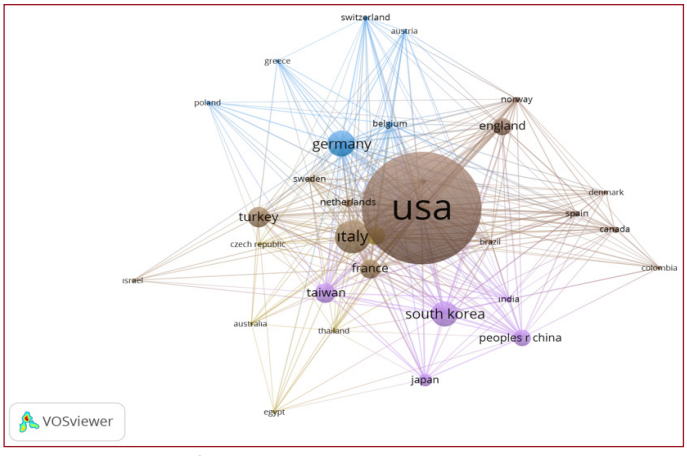

Figure 4. Citation analysis among countries

Figure 5 decipts the keyword analysis of the articles on LH.

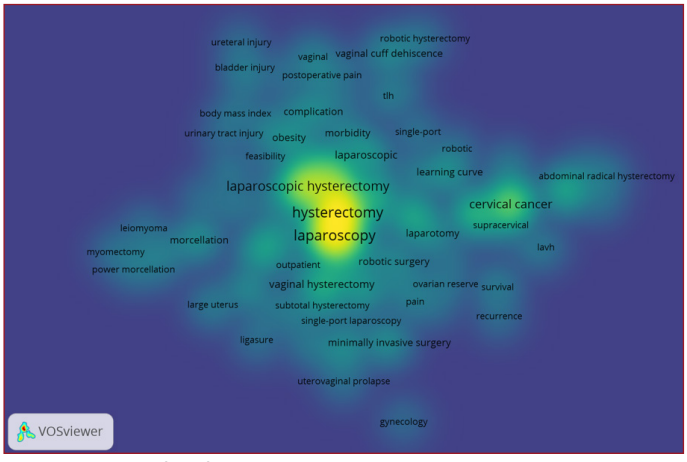

Figure 5. Keyword analysis

DISCUSSION

In bibliometric analysis, internet databases are widely utilized. While this method was commonly utilized in social field analyses in earlier years, it has recently been used in medicine, which is our field. In recent years, many different bibliometric analysis approaches have begun to enter the medical literature, and analysis research on this subject might be extended by methods like mapping and graphing. Many methodologies can be used to conduct these investigations, including content analysis, comparisons of scientific productivity by years, countries, and citation numbers. Databases that allow simple and comprehensive data analysis, such as Elsevier's Scopus, Medline/Pubmed, and Wos databases are often used for bibliometric studies. However, this method can be used to evaluate other sources such as any database, theses, journals, conferences, and so on.[21-31] However, no equivalent bibliometric analysis has been conducted on LH. As a result, we aimed to evaluate the evolution of the number of publications and citations over time, identify the most productive countries, academics, and journals, and guide future science. An international bibliometric analysis of LH articles from obstetrics and gynecology research areas throughout the course of 30 years was carried out for this study. Due to the lengthy duration and thoroughness of the bibliographic search, we were able to properly implement bibliometric techniques and indices to minimize data relativity to the greatest extent. The purpose of this study is to perform a bibliometric analysis on published publications on the topic of LH to ascertain their characteristics and trends. We located every original study on LH published between January 1992 and September 2022 using the Wos database. With the use of the software VOSviewer, bibliographic and citation data were gathered and collaborative networks of nations and keywords associated with LH were visualized. This bibliometric analysis highlighted the global research trends and developments, as well as the impact of the field on science and the interaction of researchers in the area of LH. The number of articles published on LH between 2010 and 2021 has a linear growth rate, which denotes growth that is consistent but unaffected by sample size and has not yet saturated. In terms of articles published, Prof. Fabio Ghezzi from the University of Insubria in Italy was the highest-ranking author. Also, our data suggest that 3448 authors from 51 countries contributed to the publishing of scholarly papers on LH throughout the research period, and this information shows the global importance of the issue.

It is determined that the journal with the highest number of documents is "The Journal of Minimally Invasive Gynecology". This journal's five-year impact factor was 3.935. It is understood that the journals with the highest number of documents on LH have a high impact factor. And also, in our study, we only selected the articles published in SCIE.

Our keyword analysis results state that LH is the preferred keyword in bladder surgery, uterus surgery, and even cancer surgery topics. Our keyword analysis results can help those who will do research on this subject.

Limitations

There are some limitations to this study. The first is that our field of study is only one discipline, so thorough evaluations and comparisons are impossible. Another limitation is that, while the Web of Science, the database used in our analysis, contains the most valuable documents published, it does not cover all of the articles on the subject. As a result, no documents published anywhere in the world were considered.

CONCLUSION

The number of articles published on this topic has skyrocketed in recent times. This increase in the number of published articles and citations suggests that the subject will become more popular in the next few years. As a result of our analysis, clinicians and researchers will be able to readily detect which articles about LH are popular and which themes are more cited as a result of our analysis. We anticipate that our findings will serve as a model for future research on LH for the obstetric and gynecology fields. The results of this study may offer obstetricians and researchers insight into global obstetric research and may also assist policymakers in assessing the performance of scientists doing research both domestically and internationally.

ETHICAL DECLARATIONS

Ethics Committee Approval: Ethics committee approval as it is a study on articles not received. Ethics committee approval is not required as there is no human or animal research.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The author has no conflicts of interest to declare.

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Author Contributions: The author declare that he has all participated in the design, execution, and analysis of the paper, and that he has approved the final version.

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REFERENCES

1. Tomov S, Gorchev G, Tzvetkov Ch, Tanchev L, Iliev S. Akush Ginekol (Sofiia) 2012;51(4):40-4.
2. Bechev B, Kornovski J, Kostov I, Lazarov I. Akush Ginekol (Sofiia) 2013;52(7):31-5.
3. Timov S, Gorchev G, Radinski G, Iliev S. Akush Ginekol (Sofiia) 2012;51(5):15-20.
4. Reich H. Laparoscopic hysterectomy. Surg Laparosc Endosc 1992;2(1):85-8.
5. Sokol AI, Green IC. Laparoscopic hysterectomy. Clin Obstet Gynecol 2009;52(3):304-12.
6. Özlü A. Miyofisal Ağrı Sendromu Konulu Yayınların Analizi. Int Anatolia Acad Online J Health Sci 2021;7(3):65-78.
7. Alkan Çeviker S, Yılmaz M, Uyar C, Dindar Demiray EK. Bibliometric analysis of scientific research on Crimean-Congo hemorrhagic fever in Turkey. D J Med Sci 2021;7(2):97-102.
8. Gürler M, Alkan S, Özlü C, Aydın B. Collaborative Network Analysis and Bibliometric Analysis of Publications on Diabetic Foot Infection. J Biotechinol & Strategic Health Res 2021;5(3):194-9.
9. Aydın B, Köylüoğlu AN. Network Analysis on Graves' Ophthalmopathy. Biotech&Strategic Health Res 2022;6(2):113-21.
10. Ceylan G, Özlü C. Current Status of Thalassemia Minor Studies. Black Sea J Health Sci 2022;5(3):558-64.
11. Ekici A, Alkan S, Aydemir S, Gurbuz E, Unlu AH. Trends in Naegleria fowleri global research:A bibliometric analysis study. Acta Trop 2022;234:106603.
12. Özlü A 2022. Bibliometric analysis of publications on pulmonary rehabilitation. BSJ Health Sci, 5(2):219-25.
13. Brandt JS, Hadaya O, Schuster M, Rosen T, Sauer MV, Ananth CV. A Bibliometric Analysis of Top-Cited Journal Articles in Obstetrics and Gynecology. JAMA Netw Open 2019;2(12):1-11.
14. Mitra AN, Aurora N, Grover S, Ananth CV, Brandt JS. A bibliometric analysis of obstetrics and gynecology articles with highest relative citation ratios, 1980 to 2019. Am J Obstet Gynecol MFM 2021;3(1):100293.
15. Brandt JS, Downing AC, Howard DL, Kofinas JD, Chasen ST. Citation classics in obstetrics and gynecology:the 100 most frequently cited journal articles in the last 50 years. Am J Obstet Gynecol 2010;203(4):355.e1-e7.
16. Grover S, Elwood AD, Patel JM, Ananth CV, Brandt JS. Altmetric and bibliometric analysis of obstetrics and gynecology research:influence of public engagement on citation potential. Am J Obstet Gynecol 2022;227(2):300.e1-300.e44.
17. Bai X, Song Z, Zhou Y, Wang X, Wang Y, Zhang D. Bibliometrics and Visual Analysis of the Research Status and Trends of Postpartum Depression From 2000 to 2020. Front Psychol 2021;12:665181.
18. Tantengco OAG, De Jesus FCC, Gampoy EFS, Ornos EDB, Vidal MS Jr, Cagayan MSFS. Molar pregnancy in the last 50 years:A bibliometric analysis of global research output. Placenta 2021;112:54-61.
19. Kahraman E, Yıldırım E. A Bıbliometrıc Study:Hypertension During Pregnancy. Kırıkkale Üniversitesi Tıp Fakültesi Dergisi 2020;22(3):329-40.
20. Clarivate Analytics. Web of Science Core Collection. https://www.webofscience.com/wos/woscc/basic-search
21. Öntürk Akyüz H, Özlü A. Analysis Of Publications On Pain In The Field Of Nursing By Bibliometric Analysis Method:Analysis of Nursing Studies on Pain. Chronicles of Precision Medical Researchers 2022:3(2);95–98.
22. Şahin S. Vasküler Cerrahiye Genel Bakış. Black Sea Journal of Health Science 2022;5(3):365-69.
23. Alkan S, Gökçe ON, Şahinoğlu MS. A Quantitative Study of The Most Influential Articles on Cytomegalovirus in Solid Organ Transplantation. J Biotechinol & Strategic Health Res 2022;6(2):122-30.
24. Uyar C, Mızrakçı S. Global Trends on Rotavirus Vaccine's Studies. Biotech&Strategic Health Res 2022;6(2):146-53.
25. Küçük U, Alkan S, Uyar C. Bibliometric analysis of infective endocarditis. Iberoam J Med 2021;3(4):350-55.
26. Köylüoğlu AN, Aydın B, Özlü C. Bibliometric evaluation based on scopus database:Global analysis of publications on diabetic retinopathy and comparison with publications from Turkey. D J Med Sci 2021;7(3):268-75.
27. Tahmaz A, Oğuz Mızrakçı S, Alkan S. Research trends on Legionellosis. J Clin Med Kaz 2022;19(2):29-32.
28. Öztürk G 2022. Toraks cerrahisi konusundaki yayınların global analizi ve Türkiye'nin katkısı. TOGÜ Sağlık Bilim Derg, 2(1):39-50.
29. Akyüz HÖ, Alkan S, Gökçe ON 2022. Overview on pressure ulcers studies based on bibliometric methods. Iberoam J Med, 4(1):18-23.
30. Saygili ES, Yildiz BO. Publication outcome of research presented at the European Congress of Endocrinology:a web scraping-based analysis and critical appraisal. Endocrine.2021;72:385-91.
31. Özlü, C. Bibliometric Evaluation Based On Scopus Database:A Global Analysis of Publications on Myelodysplastic Syndrome and Evaluation of Publications From Turkey. Biotech Strateg Health Res, 2021, 5.2:125-31.