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Bibliometric Analysis of Top-Cited Scientific Publications in Gynecology and Obstetrics: A 10-Year Review (2013-2022) with a Focus on Turkish Authorship and Reproductive Medicine

Jinekoloji ve Obstetrik Alanında En Çok Atıf Alan Bilimsel Yayınların Bibliyometrik Analizi: Türk Yazarlara ve Üreme Tıbbına Odaklı 10 Yıllık Değerlendirme (2013-2022)

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ABSTRACT

Objective: Bibliometric analysis has become a useful tool for understanding research trends in various medical fields. This study aimed to conduct a bibliometric analysis of the top-cited 100 scientific publications in Obstetrics and Gynecology between 2013-2022, in which a researcher from Turkey was listed as an author, and to evaluate the focus on reproductive medicine. **Material and Methods:** The Web of Science indexes were used to identify the publications, and the Bibliometrix package of R statistical software was used for the analysis. Keyword and dendrogram analyses, subject sets, and inter-cluster linkages were used to evaluate the overall scope and research areas of the articles. **Results:** The top-cited 100 publications were published in 32 different sources. The total number of references cited by these manuscripts was 5840. International collaboration was found in 49% of these publications. The leading institutions with the highest number of most-cited publications were Akdeniz University, Istanbul University, and Hacettepe University. Core themes included studies on the Coronavirus pandemic, gynecological malignancies, and surgical outcomes, while in-vitro fertilization techniques, cryopreservation, auto-transplantation, and hormone studies emerged as motor themes. **Conclusion:** The analysis provided valuable insights into the publication trends and research productivity in the field of Gynecology and Obstetrics. The study also highlighted the research in certain areas, such as in-vitro fertilization techniques and hormone studies. Additionally, the collaboration networks demonstrated the importance of international collaboration in advancing research in this field.

Keywords: Bibliometric; obstetrics and gynecology; top-cited; publication; Türkiye

ÖZET

Amaç: Bibliyometrik analiz, Jinekoloji ve Obstetrik dahil olmak üzere çeşitli tıp alanlarındaki araştırma eğilimlerini anlamak için yararlı bir yöntem haline gelmiştir. Bu çalışmada, 2013-2022 yılları arasında Jinekoloji ve Obstetrik alanında üreme tıbbına odaklanmış ve Türkiye'den en az bir araştırmacının yazar olarak yer aldığı en çok atıf alan 100 bilimsel yayının bibliyometrik analizi yapılmıştır. **Gereç ve Yöntemler:** Çalışmaya dahil edilen yayınların belirlenmesi için Web of Science indeksleri kullanıldı. Makalelerin genel kapsamını ve araştırma alanlarını değerlendirmek için anahtar kelime ve dendrogram analizleri, konu kümeleri ve kümeler arası bağlantılar incelendi. **Bulgular:** En çok atıf alan 100 yayın, 32 farklı kaynakta yayınlanmıştı. Bu makaleler tarafından atıfta bulunulan toplam referans sayısı 5840 olup, yayınların %49'unda uluslararası işbirliğine rastlanmıştır. En fazla atıf alan yayınlara sahip önde gelen kurumlar Akdeniz Üniversitesi, İstanbul Üniversitesi ve Hacettepe Üniversitesi olmuştur. Koronavirüs pandemisi, jinekolojik maligniteler ve cerrahi sonuçlarla ilgili çalışmalar ana temaları oluştururken, in-vitro fertilizasyon teknikleri, kriyoprezervasyon, oto-transplantasyon ve hormon çalışmaları motor temalar olarak ortaya çıkmıştır. **Sonuç:** Bu çalışma Jinekoloji ve Obstetrik alanındaki yayın eğilimleri ve araştırma üretkenliği hakkında değerli bilgiler sağlamıştır. Çalışma aynı zamanda in-vitro fertilizasyon teknikleri ve hormon çalışmaları gibi belirli alanlardaki araştırmaların en çok yayın yapılan alanlar olduğunu da vurgulamıştır.

Anahtar Kelime: Bibliyometrik; kadın hastalıkları ve doğum; en çok atıf alan; yayın; Türkiye

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Gynecology and Obstetrics field is constantly evolving due to the advancements in technology and research. In recent years, bibliometric analysis has become a powerful tool to evaluate and understand the research trends in different fields of medicine. Bibliometric analysis is a quantitative method used to measure the impact of research in terms of publication output, citation patterns, and collaboration networks.[1] It provides a comprehensive overview of the research activities in a particular field and helps identify the most influential researchers, institutions, and journals. The importance of such analysis lies in the ability to identify the gaps and research areas that need attention. This information can help guide the research agenda for future studies and aid in the development of new therapeutic strategies.[2]

In this study, we aimed to conduct a bibliometric analysis of research in Gynecology and Obstetrics, focusing on the publications in reproductive medicine. This analysis will provide insights into the research trends, hot topics, and influential researchers in this field. This evaluation can also serve as a basis for insights into the current research trends, the most influential researchers, and the collaboration networks. This can also be used to guide future research agendas, evaluate the performance of researchers, and aid in decision-making regarding research funding and collaborations to enhance Turkish authored reproductive medicine research studies.

MATERIAL AND METHODS

In this study, we evaluated the top-cited 100 scientific publications in the field of Obstetrics and Gynecology in the last decade, between 2013-2022, in which a researcher from Turkey was listed as an author from Turkey, and which were indexed in the Web of Science indexes (Science Citation Index Expanded [SCI-EXPANDED], Emerging Sources Citation Index [ESCI], Social Sciences Citation Index [SSCI], Conference Proceedings Citation Index-Science [CPCI-S], Conference Proceedings Citation Index-Social Science&Humanities [CPCI-SSH], Book Citation Index-Science [BKCI-S]).

STATISTICAL ANALYSES

The descriptive statistics were presented using frequency and percentage for distribution of the index, publication types, WoS categories, analysis of author numbers, and journals in which the publications were published. The overall scope and research areas of the articles were evaluated using keyword and dendrogram analyses, subject sets, and inter-cluster linkages. The results were displayed in frequency tables, cluster charts, Bradford's law charts, and international collaboration network maps. The Bibliometrix package of R statistical software was used in the bibliometric analyses in the study.

RESULTS

A total of top-cited 100 publications were included in the analyses. These manuscripts were published in 32 different sources by a total of 938 authors. Number of co-authors per publication was 11.1. Total number of references cited by these manuscripts were 5840, and the average number of citations of these studies was 93.8. International collaboration was found in 49% of these publications. Descriptive bibliometric analyses were presented in Table 1.

The distribution of journals in which the top-cited 100 articles were published were presented in Table 2. Accordingly, top-ranked journals (the ones in Zone 1 and 2 of Bradford's law, which shows the

TABLE 1: Descriptive bibliometric analyses.

Main information about data	
Timespan	2013:2022
Sources (Journals, Books, etc)	32
Documents	100
Annual Growth Rate %	-23.39
Document Average Age	7.17
Average citations per doc	93.83
References	5840
Document Contents	
Keywords Plus (ID)	553
Author's Keywords (DE)	367
Authors Collaboration	
Authors	938
Single-authored docs	2
Co-Authors per Doc	11.1
International co-authorships %	49
Document Types	
Article	71
Review	28
Article; Proceedings paper	1

TABLE 2: Journals in which top-cited 100 articles were published.

Journals	Articles (n)
Fertility and sterility	9
Human reproduction	8
Maturitas	8
Reproductive biomedicine online	8
Journal of assisted reproduction and genetics	6
American journal of obstetrics and gynecology	5
Archives of gynecology and obstetrics	5
Human reproduction update	5
Journal of maternal-fetal & neonatal medicine	5
European journal of obstetrics & gynecology and reproductive biology	4
Ultrasound in obstetrics & gynecology	4
Breast	3
Early human development	3
Journal of perinatal medicine	3
Bmc pregnancy and childbirth	2
International journal of gynecological cancer	2
International journal of gynecology & obstetrics	2
Journal of the turkish-german gynecological association	2
Molecular human reproduction	2
Taiwanese journal of obstetrics & gynecology	2
American journal of perinatology	1
Bjog-an international journal of obstetrics and gynaecology	1
Current opinion in obstetrics & gynecology	1
Gynecological endocrinology	1
Human reproduction open	1
Journal of minimally invasive gynecology	1
Journal of obstetrics and gynaecology	1
Journal of perinatology	1
Pregnancy hypertension-an international journal of womens cardiovascular health	1
Reproductive medicine and biology	1
Reproductive sciences	1
Women and birth	1

highly and moderately cited journals) were Fertility and Sterility (n=9), Human Reproduction (n=8), Maturitas (n=8), and Reproductive Biomedicine Online (n=8) (Figure 1).

Affiliations of authors from Turkey in top-cited articles were shown in Figure 2. Analysis revealed that Akdeniz University (n=15), Istanbul University (n=14), and Hacettepe University (n=13) were the leading institutions with highest number of most-cited publications.

The thematic distribution of publications showed that studies about Coronavirus pandemic, gynecological malignancies, and surgical outcomes were resided as core themes, while the in-vitro fertilization techniques, cryopreservation, auto-transplantation and hormone studies emerged as motor themes that published in an incremental rate during the last decade (Figure 3).

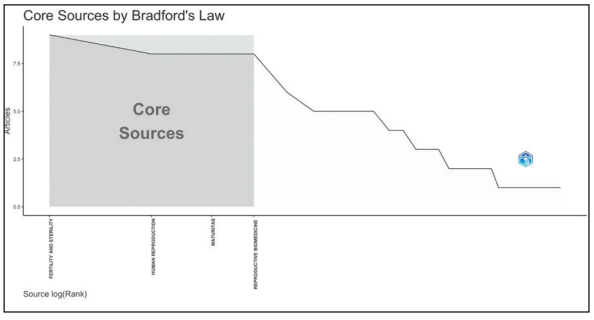

FIGURE 1: Core sources by Bradford's Law.

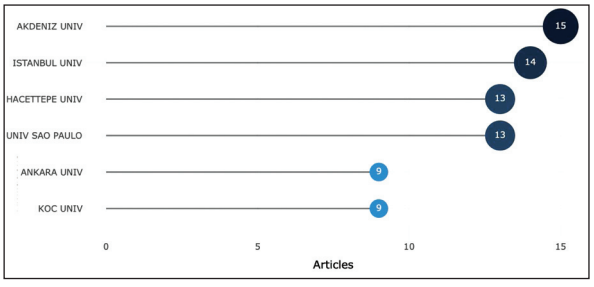

FIGURE 2: Affiliations of authors in top-cited articles.

International collaborations in top-cited 100 articles, which included at least one author from Turkey, was shown in Figure 4. The world map with a collaboration network showed that top-10 countries that Turkish authors collaborated with were the United Kingdom (n=25), United States of America (n=24), Spain (n=20), Italy (n=17), Belgium (n=14), France (n=12), Australia (n=11), Brazil (n=11), Greece (n=11), and Switzerland (n=9).

DISCUSSION

The bibliometric analysis presented in this study provides valuable insights into the publication trends and research productivity in the field of gynecology and obstetrics focusing on reproductive medicine. The analysis of the top-cited 100 publications revealed that these manuscripts were published in 32 different sources, authored by 938 researchers with an average

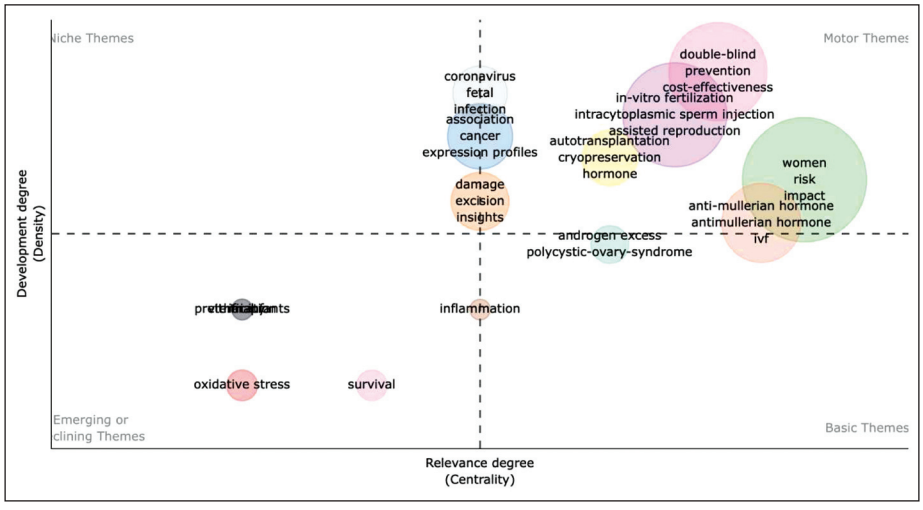

FIGURE 3: Thematic distribution of keywords and study fields in top-cited 100 articles.

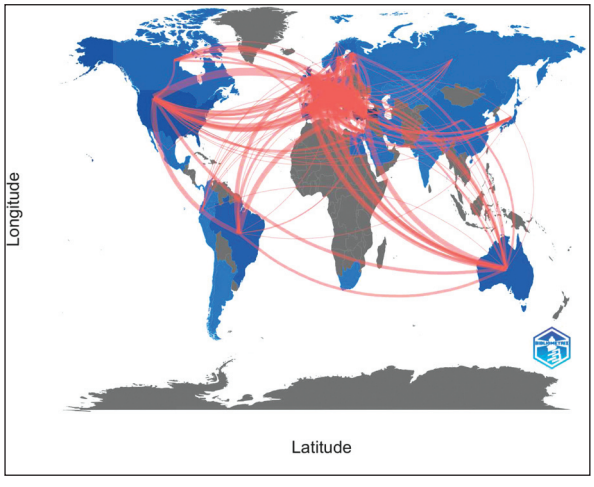

FIGURE 4: International collaboration in top-cited 100 articles including at least one author from Türkiye.

of 11.1 co-authors per publication. The total number of references cited by these manuscripts was 5840, with an average of 93.8 citations per study. These findings indicate the high impact and importance of the top-cited publications in this field.

The analysis of the distribution of journals where the top-cited articles were published demonstrated that four journals (Fertility and Sterility, Human Reproduction, Maturitas, and Reproductive Biomedicine Online) were the most prominent in this field, which underlined that the reproductive medicine is a growing and popular field in gynecology and obstetrics practive. The impact factors of these journals, which is an indicator of the importance or rank of a journal, were 7.49, 6.35, 5.11, and 4.57, respectively.[3-7] The high impact factor also refers to high visibility of published articles to the audience in the relevant filed, and it is promising for our researchers to conduct such impactful scientific research in the obstetrics and gynecology field, which have been published by these high-ranking journals. Moreover, identification of these highly and moderately cited journals using Bradford's Law could be useful for researchers to identify the most influential publications in their field and to target their research accordingly.

The analysis of affiliations of authors from Turkey in the top-cited articles revealed that Akdeniz University, Istanbul University, and Hacettepe University were the leading institutions with the highest number of most-cited publications. These results suggest that these institutions are highly productive and contribute significantly to the field of gynecology and obstetrics. Although not included in the analyses since being out of the concept of top-cited articles in this study, a Web of Science search in the field of Obstetrics and Gynecology reveals that the highest number of publications from Turkey were from University of Health Sciences (n=750), Dr. Zekai Tahir Burak Women's Health Research Education Hospital (n=678), Istanbul University (n=624), Hacettepe University (n=538), Ankara University (n=411), Etlik Zubeyde Hanim Gynecology Education Research

Hospital (n=386), Istanbul University Cerrahpasa (n=353), Baskent University (n=349), Koc University (n=323), and Akdeniz University (n=322).[8] The discrepancy between the instituions with highest number of publications and most cited publications during the same time period reveals that scientific quality of the publications might have significant differences, and qualitative properties in scientific research should be preferred to quantitative properties in research institutions.

The thematic distribution of publications indicated that studies about Coronavirus pandemic, gynecological malignancies, and surgical outcomes were the core themes, while in-vitro fertilization techniques, cryopreservation, auto-transplantation and hormone studies emerged as motor themes that published in an incremental rate during the last decade. This can be also interpreted as assisted reproductive techniques in reproductive medicine practice is a driving research field that still has potential to expand. It is not surprising that Coronavirus pandemic-related publications as the driving themes during the last decade, which was evaluated by numerous studies under the concept of COVID19-infodemic.[9] However, scientific production continued during this period in the thematic areas revealed by this study. These findings highlight the important research areas in this field and can guide researchers and policymakers to focus their efforts and resources on these themes.

Finally, the analysis of international collaborations demonstrated that Turkish authors had collaborated with researchers from the United Kingdom, the United States of America, Spain, Italy, Belgium, France, Australia, Brazil, Greece, and Switzerland. These results suggest that international collaboration is an essential component of research productivity in this field, as it allows researchers to share their knowledge, expertise, and resources to produce high-impact studies.

CONCLUSION

In conclusion, the bibliometric analysis presented in this study provides a comprehensive overview of the research productivity and publication trends in the field of gynecology and obstetrics in Turkey. Reproductive medicine, particularly in-vitro fertilization and assisted reproductive technology fields are among the most popular themes in gynecology and obstetrics practice that still continuing to grow. The findings could be useful for researchers, policymakers, and institutions to identify the most influential publications, institutions, and research themes in this field and to guide future research agendas and collaborations.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

This study is entirely author's own work and no other author contribution.

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