

An analysis of Turkey's scientific contribution in ovarian cancer research

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Summary

Aim: Bibliometric studies can be used to evaluate the performance of a country in contributing to the accumulation of medical evidences on a specific topic. The authors aimed to evaluate the contribution of Turkey to the scientific repertory in the field of ovarian cancer. **Methods and Materials:** The authors retrospectively searched papers published in the field of ovarian cancer between 1980 and 2012 by using the Web of Science software. **Results:** Turkish authors published 400 papers in Science Citation Index (SCI) Expanded indexed journals ranking Turkey 25th globally. Turkey's first publications in this field appeared at the beginning of the 1990s and showed a distinctive acceleration after 2000. Overall, publications from Turkey were cited 2,987 times and the trend of citations increased in 2000. Most of the papers from Turkey in this field were published in the European Journal of Gynaecological Oncology. **Conclusion:** The authors observed a significant improvement in the scientific activity of Turkey in the field of ovarian cancer during last decade.

Key words: Bibliometric analysis; Ovarian cancer; Research activities; Turkey.

Introduction

Bibliometric analysis is a method for evaluating the quantitative parameters of a topic or field in scientific literature. However, the results of such analyses should not be considered as solely quantitative because citation parameters and improvement trends may also give clues regarding the qualitative features. Therefore, medical bibliometric studies can be used to evaluate the performance of a country in contributing to the accumulation of medical evidences on a specific topic [1].

In general, if scientists have something important to say, they want to publish it in peer-review journals. Constituting databases facilitates the accessibility of these journals and publications. The Science Citation Index (SCI), which provides a large database for journals and publications, has been used since 1961 as a tool for bibliographic retrieval [2]. The Web of Science is comprised of a software application, which can be used for bibliometric assessment of scientific publications indexed in the SCI Expanded via several parameters and refinements [3].

In this study, the authors aimed to make a quantitative analysis of the scientific publications related to ovarian cancer originating from Turkish institutions and authors, which are published in SCI Expanded covered medical journals during the last three decades. The authors' main point of interest was to evaluate the amount and trend of this contribution to the literature. To their knowledge, this is the first bibliometric study in English literature, investigating Turkey's contribution to the field of scientific repertory on ovarian cancer.

Materials and Methods

The authors conducted a bibliometric analyses in June 2012 using the Web of Science (WOS) software to investigate the scientific publications about ovarian cancer. They retrospectively searched papers published in the field of ovarian cancer between 1980 and 2012. The authors evaluated papers that are published in the journals covered by SCI Expanded. The following search entries were used in the search field: "ovarian cancer", "ovarian neoplasm", and "cancer of the ovary". All matched results were first refined in English language. "Analyze" function of the software was then used to investigate the contribution of the countries, distribution of the publications among years, type of the documents, name of the journals, institutions, and the authors. This analysis was also performed for investigating Turkey's contribution separately. Publications and cited papers from Turkey were also analyzed with respect to the last three decades (between 1980 and 2009).

Results

WOS based search using the defined entries through the database of SCI Expanded from 1980 to the date of the study (June 29, 2012), revealed 41,770 scientific documents. Of these, 40,527 were published in English; further analysis was made in this group of publications. Among 40,527 English publications, 18,346 (45.3%) were from United States, followed by England (8.2%), Italy (7.1%), Japan (6.6%), Germany (6.4%), and Canada (5.8%). All others had a contribution smaller than 5%. Turkey had 400 (1%) publications and ranked 25. Table 1 presents the contribution of the first 20 countries in the field of ovarian cancer.

The international scientific repertory on ovarian cancer was relatively poor in the beginning of the 1980s. In example there were only 58 publications concerning ovarian cancer in 1980. On the other hand, the authors observed an international acceleration with respect to the

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Table 1. — *Distribution of top 20 countries with respect to the number of publications in Science Citation Index Expanded covered journals, in the field of ovarian cancer, between 1980 and June 2012.*

Rank	Country	Number of publications	Percentage (%) of publications
1	USA	18346	45.3
2	England	3328	8.2
3	Italy	2885	7.1
4	Japan	2658	6.6
5	Germany	2595	6.4
6	Canada	2333	5.8
7	China	1823	4.5
8	Netherlands	1595	3.9
9	France	1472	3.6
10	Australia	1349	3.3
11	Sweden	916	2.3
12	South Korea	775	1.9
13	Spain	764	1.9
14	Greece	690	1.7
15	Scotland	674	1.7
16	Denmark	632	1.6
17	Finland	611	1.5
18	Austria	594	1.5
19	Belgium	575	1.4
20	Israel	568	1.4

Table 2. — *Document types published in Science Citation Index Expanded covered journals from Turkey in the field of ovarian cancer, between 1980 and June 2012.*

Document type	Number	Percentage (%)
Article	354	88.5
Review	19	4.8
Meeting abstract	16	4.0
Proceeding paper	5	1.3
Others	6	1.5

publication number after the 1990s. Between 1980 and 1989, there were only 1,458 (3.6% of the total) publications in the field of ovarian cancer, however that number increased in the 1990s and reached 9,094 (22.4%) between 1990 and 1999. Publications from Turkey on the other hand appeared only after 1990. Turkey's contribution to international repertory of ovarian cancer research seems to speed up after 2000. There were 35 (8.8%) and 267 (66.8%) papers published by Turkish authors between 1990-1999 and 2000-2009, respectively. Number of publications from all over the world and Turkey are presented in Figure 1.

The types of the documents between 1980 and the date of the study (June 2012), classified by WOS in English SCI-Expanded based literature were as follows: article (n = 30,435, 75.1%), meeting abstract (n = 3,683, 9.1%), review (n = 3,631, 9%), proceedings papers (n = 1,900, 4.7%), and others (n = 878, 2.2%). The types of the documents from Turkey are summarized in Table 2. When the ranking of the authors with respect to the number of publications was evaluated, Markman M. was found to be the first, followed by Berchuck A. and Scambia G. The ranking of the authors worldwide according to the number of

Table 3. — *The first ten authors ranked by the number of publications in Science Citation Index Expanded covered journals in the field of ovarian cancer, between 1980 and June 2012.*

Author	Number of publications
Markman M.	336
Berchuck A.	243
Scambia G.	241
Bast R.C.	239
Narod S.A.	200
Sehouli J.	198
Ozols R.F.	181
Sood A.K.	169
Vergote I.	169
Diamandis E.P.	163

Table 4. — *Distribution of top ten institutions from Turkey ranked by the number of publications included in Science Citation Index Expanded in the field of ovarian cancer, between 1980 and June 2012.*

Institutions	Number of publications
Istanbul University	93
Hacettepe University	66
Ege University	26
Baskent University	25
Gazi University	24
Ankara University	22
Celal Bayar University	11
Uludağ University	11
Akdeniz University	10
Inonu University	10

their publications is shown in Table 3. Ayhan A. (gynecologic oncologist) with 43 publications ranked first among Turkish authors with respect to the number of scientific papers.

Overall, publications from Turkey were cited 2,987 times until June 2012. The first citation came from 1992. The number of cited papers from Turkey increased dramatically over the last decade. Distribution of the citation number of the publications from Turkey with respect to time is shown in Figure 2.

The top four journals publishing papers of Turkish authors are presented in Figure 3. Between 1980 and June 2012, most of the papers in the field of ovarian cancer from Turkey were published in European Journal of Gynaecological Oncology (n = 54, 13.5%).

The main source of the publications from Turkey was from the universities and their hospitals. There were three main cities in Turkey, which produced these publications: Istanbul, Ankara, and Izmir. The ranking of the Turkish universities with respect to the number of publications is shown in Table 4.

Discussion

In this study, the authors have evaluated the contribution of Turkey to the scientific repertory in the field of ovarian cancer. Between 1980 and June 2012, Turkish authors published 400 papers in SCI - Expanded indexed

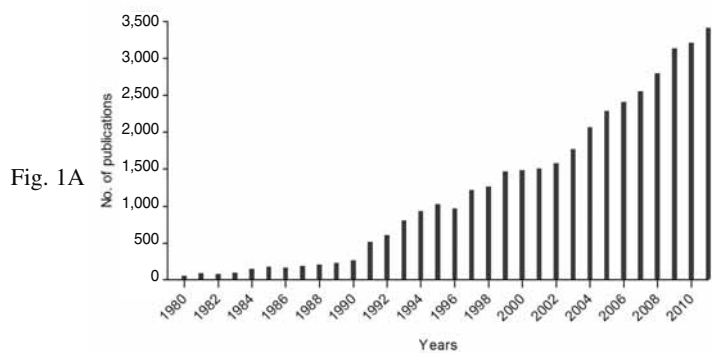


Fig. 1A

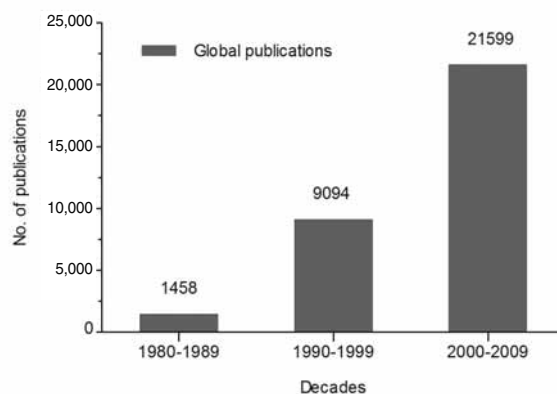


Fig. 1B

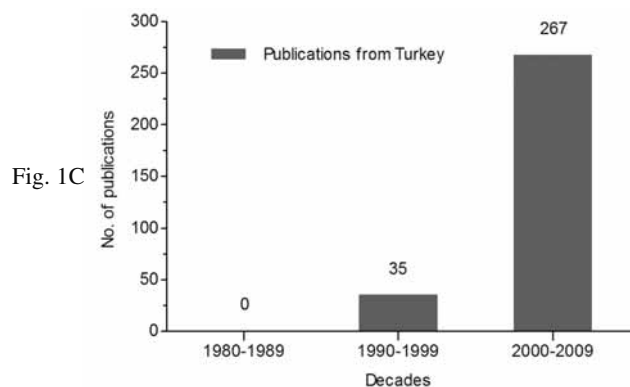


Fig. 1C

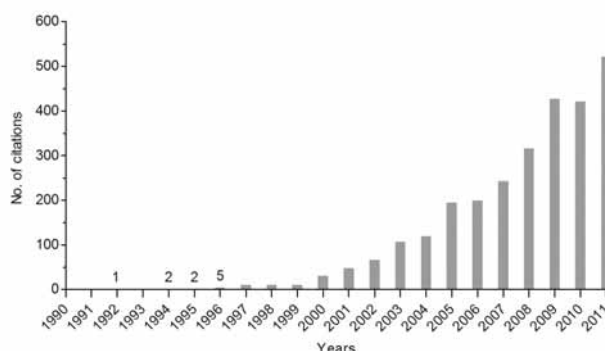


Fig. 2

Figure 1. — Distribution of the publications in journals included in Science Citation Index Expanded, between 1980 and June 2012 in the field of ovarian cancer. (A) Global publications with respect to years. (B) Global publications with respect to decades. (C) Publications from Turkey with respect to decades.

Figure 2. — Citation report of the publications from Turkey in the field of ovarian cancer.

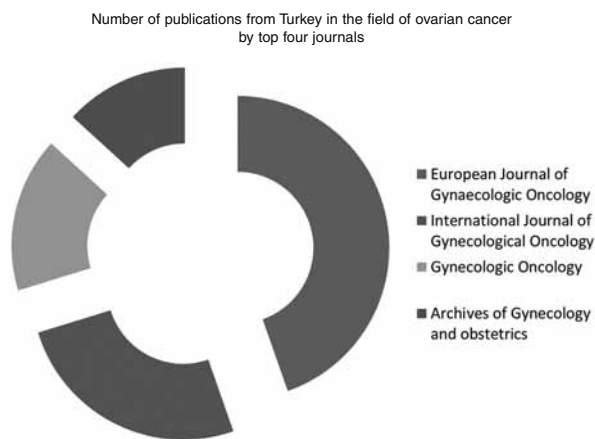


Figure 3. — The top four medical journals in Science Citation Index Expanded list publishing papers from Turkey in the field of ovarian cancer, between 1980 and June 2012.

journals ranking Turkey 25th globally. Turkey's first publications on this topic began at the beginning of the 1990s and showed a distinctive acceleration after 2000. Overall, publications from Turkey were cited 2,987 times until June 2012 and the trend of citation increased by 2000. Most of the papers from Turkey in this field were published in European Journal of Gynaecological Oncology, which was founded in 1980 as the second gynecologic oncology

hyperspecialization journal in the world. The main source of the publications from Turkey was the universities and their hospitals; Istanbul University, Hacettepe University and Ege University, ranked as first three.

Evidence-based practice or evidence-based medical applications is an invaluable approach aiming to evaluate the best available evidence produced by medicine or related medical sciences and to perform the optimal practice by making the best medical decisions. Scientific publication inherently, is one of the most efficient and convenient modalities for disseminating the evidences gained from medicine. Therefore, monitoring the scientific publications is an important way to assess the quality and quantity of the dissemination of medicine-based evidences.

With respect to the number of publications, Turkey ranked 25th globally in the field of ovarian cancer, being inferior to several European countries. Ovarian cancer incidence in Turkey seems to be comparable with that of other European countries [4]. Although, international scientific repertory on ovarian cancer was relatively poor in the beginning of the 1980s, there was an international acceleration with respect to the publication number after the 1990s. Glynn *et al.* reported a similar increase in activity of publications regarding breast cancer beginning with 1990 [5]. However, publications from Turkey appeared only after 1990. Turkey's contribution to international data on ovarian cancer research seems to accelerate only after 2000. An article in the field of ovarian

cancer from Turkey was first cited in 1992 and citation statistics showed an increasing trend especially after 2000. Ayhan A., one of the pioneers of gynecologic oncology in Turkey, contributed with the greatest amount of publications to this repertory. Chua *et al.* similar with the present findings, in their bibliometric analysis of surgical oncology research in Australia, reported an increasing trend in the number of publications from 2002 [6]. The most probable explanation of this trend seen in Turkey is that the number of experienced gynecological oncology centers and specified physicians has been increasing rapidly since 1990. In Turkey, gynecologic oncology has just been recently recognized as a subspecialty, and after that the first fellowship programs acknowledged by Ministry of Health began. The authors believe that formal fellowship programs will contribute to further accelerate this increasing trend in Turkey. European Journal of Gynaecological Oncology ranked first for publishing papers from Turkey in the field of ovarian cancer.

The ultimate goal of scientific research and publication in medicine is to make a clinical impact, which can be called "patient impact factor" [7]. This aim can be achieved by efficient dissemination of medicine-based evidences especially via publication. Bibliometric analysis allows to monitor scientific activity in a specific topic. The present results indicate that there is a positive trend in Turkey for disseminating the findings in the field of ovarian cancer. However, it can be estimated that domestic expenditure of Europe in the field of cancer research has been lagging behind North America during the last decade and may drop back from China in the future [8]. Therefore, when planning the future, these findings should be taken into account and policies aimed at improving resources in cancer research and to support researchers should be considered in a more efficient way.

Conclusion

In conclusion, the authors observed a significant improvement in the scientific activity of Turkey in the field of ovarian cancer during last decade. The authors believe that emerging of acknowledged fellowship programs with hyperspecialization, increasing facilities on cancer research, and encouragement originating from the remarkable achievements of Turkish pioneers of gynecologic oncology will help to further increase Turkey's contribution in ovarian cancer research.

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