



# Most cited articles in general surgery from Turkey

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## ABSTRACT

**Objective:** The citation number of an article gives us information about its quality and contribution to science. In this article, we aimed to find the most frequently cited article in general surgery from Turkey, and evaluate how these articles in general surgery contributed to the world literature.

**Material and Methods:** We used the science citation index expanded database to find the most frequently cited articles in general surgery from Turkey.

**Results:** Among the 52 articles found, the most common subjects were as follows: hydatid cyst (21.1%), pilonidal disease (15.4%), laparoscopic operations (15.4%), breast diseases (11.5%), and inguinal hernia (7.7%). Two articles were cited in more than 100 articles. Furthermore, 48.8% of the articles were published from three major cities. Most articles were published between 2000 and 2004, and 65.4% of articles were case series.

**Conclusion:** Most of the cited articles were about hydatid cyst and pilonidal disease, which are more common in the Turkish population compared with other countries. Evaluation of most cited articles is important to identify the fields in which Turkey contributes to the world literature.

**Keywords:** General surgery, citation, medical article

## INTRODUCTION

Citation is a reference to an article in another publication. The impact factor of medical journals is calculated based on citation analysis, which gives information about the quality of that journal. Although the number of citations an article receives is not a stand-alone criterion, it provides information about the quality of that article, its contribution to the scientific environment, and the author's academic effectiveness (1).

The Institute for Scientific Information (ISI) has been recording citations since 1945, and those from 1975 on can be traced electronically. The Science Citation Index Expanded (SCIE), which is the journal citation tracking system of ISI, monitors more than 10000 journals on science, social sciences and arts, and calculates the journal's impact factor based on the number of citations (2).

In recent years, articles with most citations in various fields were evaluated by using SCIE data (3-9). Although there are similar studies from our country, there is no study conducted specifically in general surgery. In this study, articles from Turkey that received the highest number of citations were examined.

## MATERIAL AND METHODS

On March 1, 2013, 50 most cited articles on general surgery and its subtopics from Turkey were identified using the SCIE database. Due to an equal number of citations, two additional articles were included, with a resultant 52 articles. Articles related to clinical studies including other specialties besides general surgery and those that were multi-national studies were only included if the first author was from a General Surgery Clinic in Turkey. Books and congress presentations were excluded from the study.

The most cited articles were evaluated and data on the number of citations, the city and institution of the publication, the author's name, and year of publication, study type, study subject, and the journal of publication were recorded.

## Statistical Analysis

Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) 16.0 software was used for analysis, and descriptive statistics were used in defining frequency.

## RESULTS

Within the most cited 52 articles, only two received more than 100 citations (Table 1). Regarding topics, the most frequent subjects were hydatid cysts (21.1%), pilonidal sinus (15.4%), laparoscopic procedures

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(15.4%), breast disorders (11.5%), and inguinal hernia (7.7%) (Figure 1).

There were 34 case-series, 5 randomized controlled trials, 5 experimental studies, 3 non-randomized controlled trials, 2 reviews, 2 cross-sectional cohort, 1 case report, and 1 survey.

Ten of the studies were performed in Istanbul University Istanbul Medical Faculty, 8 in Ankara University, 5 in Ankara Numune Training and Research Hospital, and 4 in Hacettepe University (Table 2). Forty-three studies were carried out in university hospitals. When evaluated according to cities, 41 studies (78.8%) were from the three largest cities in our country: 26 were from Ankara, 10 from Istanbul, and 5 from Izmir. Evaluation according to authors showed that two authors had three articles, and six had 2 articles (Table 3).

The majority of studies were published after 1999, with those published between 2000-2004 accounting for 50% of all publications. The most recent publication year was 2010 (Figure 2).

Journals with the highest number of publications were the World Journal of Surgery and Disease of the Colon & Rectum with 8 articles in each, and the American Journal of Surgery with 6 articles (Table 4). None of the most cited articles was published in a journal that is published in Turkey.

## DISCUSSION

Although high number of citations does not always show that the article is of very high quality, it indicates that the article has drawn scientific attention and is being discussed. The number of citations is also important in terms of determining a journal's impact factor (10).

In the literature, there are studies evaluating most frequently cited articles on particular divisions and subjects. In this study, the most cited manuscripts in the field of general surgery from Turkey were investigated with the aim of determining in what direction our country contributes to the world literature.

According to our study, more than one-third of all publications were associated with diseases that are common in our country such as hydatid cyst and pilonidal sinus. Similarly, in the evaluation of all publications from Turkey, Onat showed that the most common issues in divisions other than general surgery were also associated with diseases that were more common in Turkey as compared to other countries (11). While the number of citations may be as high as 1000 in the international arena in general surgery, the highest number reached in our country is 156. Although these numbers seem low, when hydatid cyst or pilonidal sinus diseases are considered, it is believed that the number of citations are high and direct the world literature.

With respect to the time of publications, the number of articles has increased after 1998, with the highest number of publications being in the period of 1999-2004. An article will start receiving citations 1-2 years after being published, and nearly reaches to the maximum number of citations in 7-10 years. However, an article is fully-recognized and obtains the maximum number of citations only in 10-20 years (12). In this case, it may be estimated that articles that have been published between 1999-2004 have reached the maximum number of

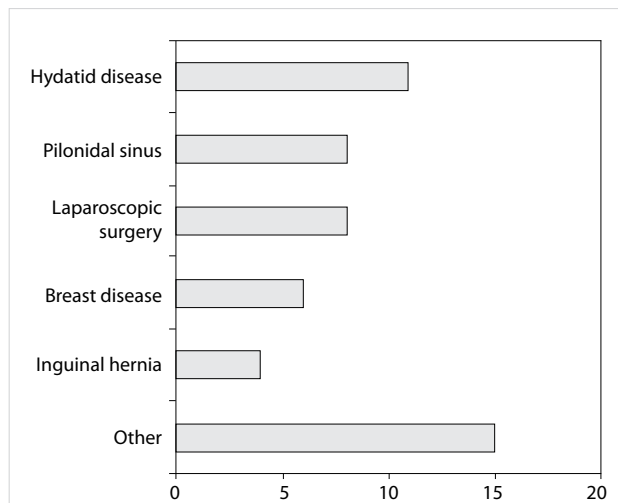


Figure 1. Distribution of studies according to subject

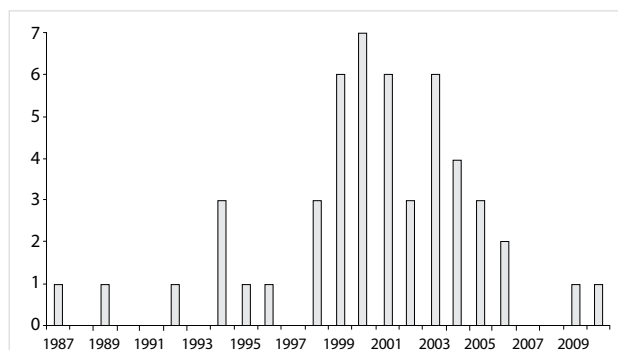


Figure 2. Year of publication

citations, and that there will be an increase in the number of citations related to articles published later than that date. This may explain the low number of articles published within the last 5 years in our study.

The most valuable types of studies are considered as meta-analysis and randomized controlled trials. The most frequent study type was case series in our study. Only five articles were randomized controlled studies. This situation is similar in other studies that evaluated the most frequently cited articles (13-15). The reasons for the low number of randomized controlled trials within the most frequently cited articles are difficulty in conducting such studies, cost, failure to reach large number of patients and publication of these type of studies especially in recent years that could not yet get enough citations (12).

It was identified that the majority of centers performing such studies were Turkey's three largest cities. In particular, general surgery clinics in Istanbul University Istanbul Faculty of Medicine and Ankara University School of Medicine were found to supply a significant contribution to the literature on behalf of Turkey. The number of articles from teaching and research hospitals were less than universities, and most of the publications were from the oldest Universities in Istanbul and Ankara, suggesting that from a scientific point of view, these university hospitals guide general surgery in Turkey.

There are limitations to our study. In order to access all articles from general surgery clinics within SCIE, other depart-

Table 1. Author, journal information of the 50 most-cited articles

Author	Journal	Citation
Sayek I, Yalın R, Sanaç Y	Arch Surg. 1980 Jul;115(7):847-50	156
Mercan S, Seven R, Özarmagan S, Tezelman S	Surgery. 1995 Dec;118(6):1071-5	101
Demirci S, Eraslan S, Anadol E, Bozatlı L	World J Surg. 1989 Jan-Feb;13(1):88-90	97
Kuzu MA, Özaskan C, Köksoy C, Gürler A, Tüzüner A	World J Surg. 1994 Nov-Dec;18(6):948-5	95
Özaslan C, Kuru B	Am J Surg. 2004 Jan;187(1):69-72	91
Sayek İ, Onat D	World J Surg. 2001 Jan;25(1):21-7	85
Yerdel MA, Akın EB, Dolalan S, Türkçapar AG, Pehlivan M, Geçim İE, Kuterdem E	Ann Surg. 2001 Jan;233(1):26-33	85
Sayek İ, Tırnaksız MB, Doğan R	Surg Today. 2004;34(12):987-96	68
Barbaros U, Dinççağ A	J Gastrointest Surg. 2009 Aug;13(8):1520-3	68
Ersin S, Firat O, Sözbilen M	Surg Endosc. 2010 Jan;24(1):68-71	66
Menteş BB, İrkörücü O, Akın M, Leventoğlu S, Tatlıcıoğlu E	Dis Colon Rectum. 2003 Feb;46(2):232-7	61
Alper A, Arroğul O, Emre A, Uras A, Ökten A	Br J Surg. 1987 Apr;74(4):243-5	60
Akinci ÖF, Coşkun A, Uzunköy A	Dis Colon Rectum. 2000 May;43(5):701-6	59
Terzi C, Sökmen S, Seçkin S, Albayrak L, Uğurlu M	Surgery. 2000 Jun;127(6):622-7	58
Yağcı G, Üstünsöz B, Kaymakcioğlu N, Bozlar U, Görgülü S, Şimşek A, Akdeniz A, Çetiner S, Tufan T	World J Surg. 2005 Dec;29(12):1670-9	58
Füzün M, Bakır H, Soylu M, Tansuğ T, Kaymak E, Harmancıoğlu O	Dis Colon Rectum. 1994 Nov;37(11):1148-50	57
Balık AA, Başoğlu M, Çelebi F, Ören D, Polat KY, Atamanalp SS, Akçay MN	Arch Surg. 1999 Feb;134(2):166-9	56
Yıldırım E, Berberoğlu U	Eur J Surg Oncol. 1998 Dec;24(6):548-52	54
Ersin S, Tunçyürek P, Esasolak M, Alkanat M, Büke Ç, Yılmaz M, Telefoncu A, Köse T	J Surg Res. 2000 Apr;89(2):121-5	52
Haberal M, Gülay H, Tokyay R, Öner Z, Enünlü T, Bilgin N	World J Surg. 1992 Nov-Dec;16(6):1183-7	51
Külah B, Kulaçoğlu İH, Oruç MT, Düzgün AP, Moran M, Özmen MM, Coşkun F	Am J Surg. 2001 Feb;181(2):101-4	50
Seven R, Berber E, Mercan S, Eminoğlu L, Budak D	Surgery. 2000 Jul;128(1):36-40	50
Akinci ÖF, Bozer M, Uzunköy A, Düzgün SA, Coşkun A	Eur J Surg. 1999 Apr;165(4):339-42	50
Kuzu MA, Kale İT, Çöl C, Tekeli A, Tanık A, Köksoy C	Hepatogastroenterology. 1999 Jul-Aug;46(28): 2159-64	48
Geçim İE, Koçak S, Ersöz S, Bumin C, Arıbal D	Surg Today. 1996;26(8):607-9	48
Gülay H, Bora S, Kılıçtırgay S, Hamaloğlu E, Göksel HA	J Am Coll Surg. 1994 May;178(5):471-4	47
Karadağ A, Mentеш BB, Üner A, İrkörücü O, Ayaz S, Ozkan S.	Int J Colorectal Dis. 2003 May;18(3):234-8	47
Erbil Y, Ademoğlu E, Özbey N, Barbaros U, Yanık BT, Salmaslıoğlu A, Bozbora A, Özarmağan S	World J Surg. 2006 Sep;30(9):1665-71.	46
Kama NA, Koloğlu M, Doğanay M, Reis E, Atlı M, Dolapçı M	Am J Surg. 2001 Jun;181(6):520-5.	46
Kuzu MA, Tanık A, Kale İT, Aşlar AK, Köksoy C, Terzi C	World J Surg. 2000 Aug;24(8):990-4	46
Erzurumlu K, Malazgirt Z, Bektaş A, Dervisoğlu A, Polat C, Şenyürek G, Yetim İ, Özkan K	World J Gastroenterol. 2005 Mar 28;11(12):1813-7	45
Polat C, Yılmaz S, Serteser M, Köken T, Kahraman A, Dilek ON	Surg Endosc. 2003 Nov;17(11):1719-22	45
Korkut M, İçöz G, Dayangaç M, Akgün E, Yeniay L, Erdoğan O, Cal C	Dis Colon Rectum. 2003 May;46(5):649-52	45
Bozkurt MK, Tezel E	Dis Colon Rectum. 1998 Jun;41(6):775-7	45
Yanar H, Taviloglu K, Ertekin C, Güloğlu R, Zorba U, Cabioğlu N, Başpınar İ	World J Surg. 2006 Sep;30(9):1750-4	44
Topgül K, Özdemir E, Kılıç K, Gökbayır H, Ferahköşe Z	Dis Colon Rectum. 2003 Nov;46(11):1545-8	44

Table 1. Continued		
Külâh B, Düzgün AP, Moran M, Kulaçoğlu IH, Özmen MM, Coşkun F	Am J Surg. 2001 Nov;182(5):455-9	44
Erdem E, Sungurtekin U, Neşşar M	Dis Colon Rectum. 1998 Nov;41(11):1427-31	44
Köksoy C, Kuzu MA, Kuzu I, Ergün H, Gürhan I	Br J Surg. 2001 Mar;88(3):464-8	44
Yıldırım E, Dalgıç T, Berberoğlu U	J Surg Oncol. 2000 Aug;74(4):267-72	43
Çubukçu A, Gönüllü NN, Paksoy M, Alponat A, Kuru M, Ozbay O.	Int J Colorectal Dis. 2000 Jun;15(3):173-5	43
Akinoglu A, Bilgin I, Erkoçak EU.	Can J Surg. 1985 Mar;28(2):171-2, 174	43
Öğünç G, Tuncer M, Öğünç D, Yardımcı M, Ersoy F	Surg Endosc. 2003 Nov;17(11):1749-55	42
Asoğlu O, Özmen V, Karanlık H, Tunacı M, Cabioğlu N, İğci A, Selcuk UE, Keçer M	Breast J. 2005 Mar-Apr;11(2):108-14	42
Kama NA, Doğanay M, Dolapçı M, Reis E, Atlı M, Koloğlu M	Surg Endosc. 2001 Sep;15(9):965-8	42
Eroğlu A, Demirci S, Ayyıldız A, Kocaoğlu H, Akbulut H, Akgül H, Elhan HA	Br J Cancer. 1999 Jul;80(10):1630-4	42
Yerdel MA, Karayalçın K, Koyuncu A, Akın B, Köksoy C, Türkçapar AG, Erverdi N, Alaçayır I, Bumin C, Aras N.	Am J Surg. 1999 Mar;177(3):247-9	42
Giles Y, Boztepe H, Terzioğlu T, Tezelman S.	Arch Surg. 2004 Feb;139(2):179-82	41
Özmen V, Müslümanoğlu M, Cabioğlu N, Tuzlalı S, İlhan R, İğci A, Keçer M, Bozfakioğlu Y, Dagoğlu T	Breast Cancer Res Treat. 2002 Dec;76(3):237-44	41
Yorgancı K, Sayek İ	Am J Surg. 2002 Jul;184(1):63-9	41
Urhan MK, Küçükkel F, Topgül K, Özer I, Sarı S	Dis Colon Rectum. 2002 May;45(5):656-9	41
Günay K, Taviloğlu K, Berber E, Ertekin C	J Trauma. 1999 Jan;46(1):164-7	41

Table 2. Distribution according to institutions	
Institution	Number of articles
Istanbul University Istanbul Medical Faculty	10
Ankara University Medical Faculty	9
Ankara Numune Teaching and Training Hospital	5
Hacettepe University Medical Faculty	4
Ege University Medical Faculty	3
Gazi University Medical Faculty	2
Harran University Medical Faculty	2
Ondokuz Mayıs University Medical Faculty	2
Ankara Teaching and Training Hospital	2
Ankara Oncology Teaching and Training Hospital	2
Other	11

Table 3. Authors with more than two articles	
Author	Number of articles
İskender Sayek	3
Ayhan Kuzu	3
Ömer Faruk Akıncı	2
Sinan Ersin	2
Nuri Aydın Kama	2
Bahadır Külâh	2
Mehmet Ali Yerdel	2
Emin Yıldırım	2

ments related to surgery such as gynecology, infectious diseases, otorhinolaryngology were included in the search. In spite of this, articles published in journals beyond search criteria may have been missed. The study evaluated only journals, without taking books and conference proceedings into consideration. The SCIE electronic database goes back to 1975. Therefore, articles published prior to this date could not be accessed. Finally, the time factor is not taken into consideration. Recent manuscripts have not completed the required time to get a maximum number of citations, thus not being able to enter the top 50 list. This creates a disad-

vantage for new publications (16). Nevertheless, these publications may be included in this list with increased citations on future updates.

## CONCLUSION

It was identified that the most cited papers in the international area were regarding diseases that are more frequent in our country such as hydatid cyst or pilonidal sinus. Identification of most cited articles is important to clarify in which areas Turkey contributes to the world literature.

**Ethics Committee Approval:** Ethics committee approval was not received since the study is about articles.

**Peer-review:** Externally peer-reviewed.

Table 4. Journals the articles published in

Journal name	Number of publications
World Journal of Surgery	8
Disease of the Colon & Rectum	8
American Journal of Surgery	6
Surgical Endoscopy and Other Interventional Techniques	4
Archives of Surgery	3
British Journal of Surgery	3
Surgery	3
Surgery Today	2
International Journal of Colorectal Disease	2
Other	13

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