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One Hundred Most-Cited Articles in Head and Neck Surgery and Analysis of Female Authorship

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Abstract

Background: While female head and neck surgeons have made significant contributions to the field, women’s achievements in scientific communication have traditionally been underreported.

Methods: A search of high-impact journals in the field of head and neck surgery was performed in the Elsevier’s Scopus database to identify the top 100 most-cited articles.

Results: The top 100 most-cited articles (during the span of 1953 and 2016) had the highest total number of citations between 2005–2009. Women accounted for 36% of first authors and 25% of corresponding authors. Change in the relative number of first female authors in these top 100 articles did not increase significantly between 1950 and 2019.

Conclusion: The proportion of female first authors in head and neck surgery has not significantly increased over the past several decades, despite greater numbers of female trainees. Our findings support the need for additional research on female representation in head and neck surgery.

Keywords

Top Cited; Head and Neck Surgery; Otolaryngology; Impact; Female Authorship

Introduction

Though women have historically comprised a minority of physicians, female otolaryngologists have made significant contributions to the field of head and neck surgery, including but not limited to development of popular surgical tools by Dr. Alice Bryant and Dr. Margaret Butler, and the description of auriculotemporal nerve syndrome by Dr. Lucja Frey.¹ Despite their prominence in the field, women’s achievements in scientific communication and publication have been well-documented to be significantly underreported in comparison to their male colleagues (i.e., the Matilda Effect).²

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Conflicts of Interest: None

Several factors contribute to the overall impact a publication has within its field, including study design, methodology, novelty of investigation, and journal in which it is published.³ Articles relevant to otolaryngology that accrue many citations typically do so because they provide advancements furthering the understanding of pathology, innovations in patient care and treatment modalities, and unique surgical methodology which can be adopted by others. Therefore, the number of times an article has been cited can represent the value it brings to its respective field, and additionally provides unique insight into what attributes are most valued within head and neck surgery.⁴⁻⁷

When evaluating the impact of the top articles in head and neck surgery, it is important to note author demographics, including gender, country of origin, and institutional affiliations. Identifying gaps in equal representation is essential, given that patient satisfaction has been shown to increase when there is concordance between physician and patient gender and race.⁸ Thus, assessing the relationship and trends between article impact and author gender is key in determining the degree of progress made towards gender minority representation in the field.

We intend to characterize the top 100 most-cited studies in the field of head and neck surgery, identifying which articles have been influential in shaping this subspecialty and determining which attributes of these articles represent the priorities within the academic community. Additionally, we will determine whether the characteristics of the article's geographical origin, study design, study topic, year of publication, and author demographics relate to rank position, with special attention paid to trends in female authorship over time.

Materials and Methods

This study did not require Institutional Review Board approval since no patient data was accessed and only published articles were utilized. The Elsevier's Scopus database was used to determine the top 100 most-cited articles published in the subspecialty of head and neck surgery. Influential journals relating to head and neck surgery and oncology were searched, including cancer journals with an impact factor greater than 5.0 and head and neck surgery journals with an impact factor more than 2.0 based on impact factors in July 2022. Journals included in the final analysis were *Laryngoscope*, *Journal of the National Cancer Institute*, *Otolaryngology-Head and Neck Surgery*, *Head and Neck*, *JAMA Otolaryngology-Head & Neck Surgery* (formally known as the *Archives of Otolaryngology*), *JAMA Oncology*, *Oral Oncology*, *International Journal of Cancer*, *European Journal of Cancer*, *Cancer*, *CA Cancer Journal for Clinicians*, *Journal of Clinical Oncology*, *Cancer Epidemiology, Biomarkers, & Prevention*, *Cancer Research*, and *Clinical Cancer Research*.

A search of these 15 journals from the inception of the database to July 2022 was performed. These articles were collectively organized and ranked by the number of citations and the most cited articles were chosen. After identifying the top 100 most-cited articles, we utilized the Elsevier's Scopus database to collect information about the articles, including the years of publication, gender of the first and corresponding authors, affiliated institutions, subject category, and total number of citations. The United States Social Security Administration Baby Names Database⁹ was used by two separate investigators (L.M. & K.R.) as a reference

to determine author gender; in ambiguous cases, an Internet search was undertaken to find author biography information. Each paper was reviewed and assigned a study design category, with the categories including: “randomized-controlled trial”, “prospective cohort”, “retrospective matched case-control study” or “retrospective non-matched cohort study”, and “other” studies, including grading system classifications, systematic reviews of the literature, and a single case series.

Pearson Chi square tests were used to determine whether level of evidence or journal of publication was correlated with publication rank (by cumulative number of citations). Descriptive statistics and the Monte Carlo simulation method for Chi square were performed to evaluate gender differences in average citation number. Statistical analysis was performed using SPSS version 27.0 with $P < 0.05$ selected for significance threshold.

Results

The top 100 most-cited articles were published between 1953 and 2016 (Table 1), with a total of 83,882 citations (mean = 838.8; standard deviation = 477.3; median = 641.5; interquartile range = 548.8–946.8). The total number of citations was highest for articles published in the years between 2005–2009 (Figure 1), and the average number of citations per paper was highest in the years of 1950–1954 (Figure 2). However, this is an artifact of dividing article publication dates into 5-year periods; only the most-cited article was published within this time frame, skewing the average. The 5-year period with the second-highest number of average citations was 1985–1989 (Figure 2).

Slaughter *et al.*'s 1953 article in *Cancer* had the most citations at 2764.¹⁰ The article described gross and microscopic evidence of the field cancerization that is found in oral cavity squamous cell carcinomas. The first author and the corresponding author were male. The article with the second highest number of citations (2622) was House *et al.*'s 1985 study on the facial nerve grading system.¹¹ The article delineates a standardized grading system for facial nerve palsies. Both the first author and corresponding author were male. The third most-cited article with 2402 citations was by Chaturvedi *et al.* and titled “Human papillomavirus and rising oropharyngeal cancer incidence in the United States.”¹² This 2011 article, written with a male first author and female corresponding author, was an investigation into whether rising incidence and survival of oropharyngeal cancers was secondary to human papillomavirus (HPV) infection.

The *Journal of Clinical Oncology* published the majority of these top cited articles (n=30, Table 2), followed by 15 in *Cancer* and 15 in the American Association of Cancer Research (AACR) journal *Cancer Research*. Seventy different institutions were represented, with the highest number from Johns Hopkins University (n=8), University of Texas M.D. Anderson Cancer Center (n=5), the University of Pittsburgh (n=4), the University of California, San Francisco (n=3), and the National Cancer Institute (n=3). These institutions represent 17 different countries, with the United States contributing most papers (n=64), followed by France (n=8), and China (n=5).

Though the majority of journals addressed the topic of cancer (with the exception of *Otolaryngology-Head and Neck Surgery*), the *Journal of Clinical Oncology*, *Cancer*, and *Cancer Research* published significantly more oncology-related articles than the others (Table 3). All journals published more clinical studies than basic science research except for *Cancer Research*, which published 11 basic science papers and 4 clinical studies (Table 3). Of the 30 articles published in the *Journal of Clinical Oncology*, 13 were in the top 50. Of the 15 published in *Cancer*, 7 were in the top 50 articles, and of the 15 published in *Cancer Research*, 7 were in the top 50.

Women accounted for 36% of all first authors and 25% of all corresponding authors. Articles written by female first authors had a mean 794.8 citations, whereas those with male first authors had a mean 863.6 citations. No significant difference existed in the number of female lead or female corresponding authors between the top 50 and bottom 50 articles on the list ($P=0.405$ and $P=0.817$, respectively). Though the absolute number of female first authors rose between 2005–2009 as more manuscripts were published, there was no significant difference found in the relative number of female first authors published in the chronological first half (prior to 2005) versus the second half ($P=0.121$). Notably, there was a significant increase found in the proportion of female corresponding authors over time ($P=0.006$).

Discussion

In this bibliometric analysis, we identified the top 100 influential peer-reviewed papers in the field of head and neck surgery by selecting the most-cited articles from those journals with the highest impact factors. Not surprisingly, our analysis indicates that articles pertaining to cancer diagnosis, treatment, and outcomes are most impactful, with 88 of the 100 articles being directly relevant to oncology. This is likely because head and neck surgical oncology makes up a significant portion of head and neck surgeries and comprises some of the most challenging cases and vulnerable patients, requiring surgeons to regularly investigate and implement cutting-edge treatments. The majority of these articles are categorized as clinical research ($n=81$), such as the investigation into surgery, chemotherapy, and radiotherapy as treatment options for head and neck cancer.^{13,14} Additionally, this evaluation indicates there is a demand for impactful basic research articles, as these comprised only 19% of the most influential articles. Important examples include discoveries of clinical tumor markers, genetic relationships with cancer, and the growing understanding of the relationship with the HPV and head and neck cancer.^{15–18} The majority of articles were published in *Journal of Clinical Oncology* ($n=30$), *Cancer Research* ($n=15$), *Cancer* ($n=15$), *Journal of the National Cancer Institute* ($n=9$), *Laryngoscope* ($n=6$), *International Journal of Cancer* ($n=5$), and *Otolaryngology-Head and Neck Surgery* ($n=4$), highlighting the importance of these particular journals within the field.

We also analyzed trends in female first and corresponding authorship in head and neck surgery. Representation of women in medicine has made significant gains in the last several decades. Today, women make up roughly 50% of matriculating medical students, up from just 25% in 1985.^{8,19} The number of female residents and attending otolaryngologists has also grown. Most recently, the number of female otolaryngology residents has

increased from 30.8% in 2009 to 36.2% in 2019, while the number of practicing female otolaryngologists has risen from less than 1% in 1980 to approximately 17% in 2017.¹ Interestingly, though there has not been an increase in the proportion of females applying for otolaryngology residency between 2008–2018, the number of female residents has increased from 29.8% to 35.9% during this period.⁸ This may indicate a promising trend of improved prioritization of gender diversity.

However, in academia and in scientific communication, improvement towards greater female representation has been more modest. As recently as 2019, just 16% of otolaryngology attendings and 3.4% of otolaryngology department chairs were women.¹ Eloy and colleagues found that male faculty also received more National Institutes of Health (NIH) funding than their female peers, including a higher proportion of prestigious R-series grants.²⁰ This is reflected in our own evaluation of data and trends in female authorship in the most influential articles in head and neck surgery, with women making up a minority of both first authors and corresponding authors, though the proportion of female corresponding authors appears to have increased over time.

Additionally, female authorship did not have any apparent relationship with article rank, as there was no significant difference between the top 50 articles and second 50 articles in this regard. Though women have continued to gain representation in percentage of matriculating medical students, otolaryngology residents, and practicing otolaryngologists, the proportion of influential articles authored by female first authors has not significantly increased over time. Interestingly, the relative number of articles with female corresponding authors has increased over time, indicating that there may have been some improvement in this area. However, females still make up a minority of first and corresponding authors in our analysis, and this increase in female authorship proportion over time is not seen among first authors, who are more likely to be students or residents.²¹ This suggests that additional progress can be made, especially amongst trainees, where more women can make valuable contributions in advancement of the field.

Successful strategies to improve female representation in otolaryngology are likely to be multifactorial, as some discrepancy may be partially explained due to professional sacrifices made by some female physicians and scientists during childbearing years, as well as the underrepresentation of women on major medical journal editorial boards.^{22,23} Mentorship for female students and trainees may play a role in improving representation. In a review of surgical training in the United States, Healy and colleagues found that trainees were more prolific in their research and attained more grants when they were supported by a mentor.²⁴ Additionally, in a survey of surgical trainees, residents preferred mentors shared similar backgrounds, and female residents were more likely to gravitate towards female mentors.²⁵

There are several limitations which should be considered when interpreting the results of our study. Though care was taken to include the highest impact journals in the fields of oncology and head and neck surgery, only 15 of many high-impact journals were analyzed, there are certainly several studies that have accumulated many citations which could have been excluded from evaluation. Additionally, data must be reviewed with the knowledge that studies which have been published with sufficient time to accumulate citations presents

a confounding factor when comparing across time periods of publication. This makes it difficult to predict the changing priorities within the specialty, as more recent studies have had less time to accrue citations. Third, when determining author gender, every effort was made to accurately determine whether the author was male or female. However, it is possible that despite the measures taken, a small number of authors could have been mischaracterized. Finally, evaluation of female first and corresponding authorship provides only a limited view into female representation in academic head and neck surgery, and should be understood in context with other data on the topic.

Conclusion

The 100 most-cited articles in head and neck surgery represent the most influential and impactful contributions to this subspecialty of otolaryngology, clearly demonstrating the significant advancements made in the field. While the relative number of female corresponding authors has improved over time, the proportion of female first authorship has not significantly increased over the past several decades, indicating that despite increases in female medical students, residents, and attending physicians, room for progress exists particularly in academia and scientific communication. Our findings support the need for continued research on female representation in otolaryngology.

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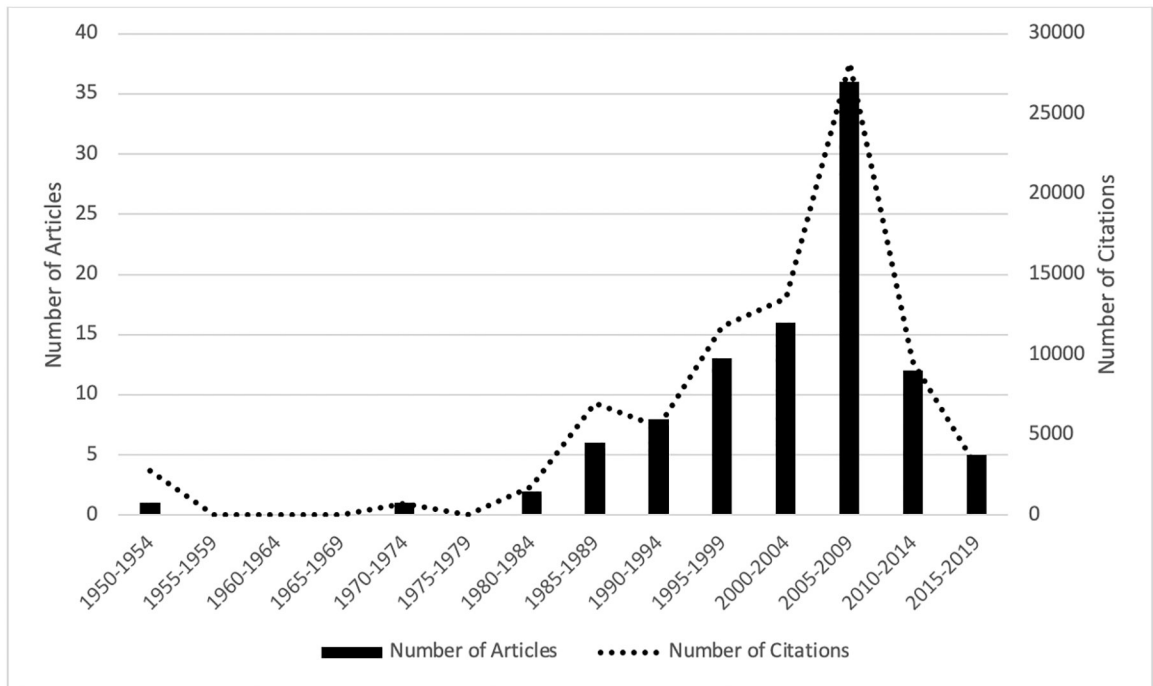


Figure 1. Number of top papers and total number of citations by year of publication.

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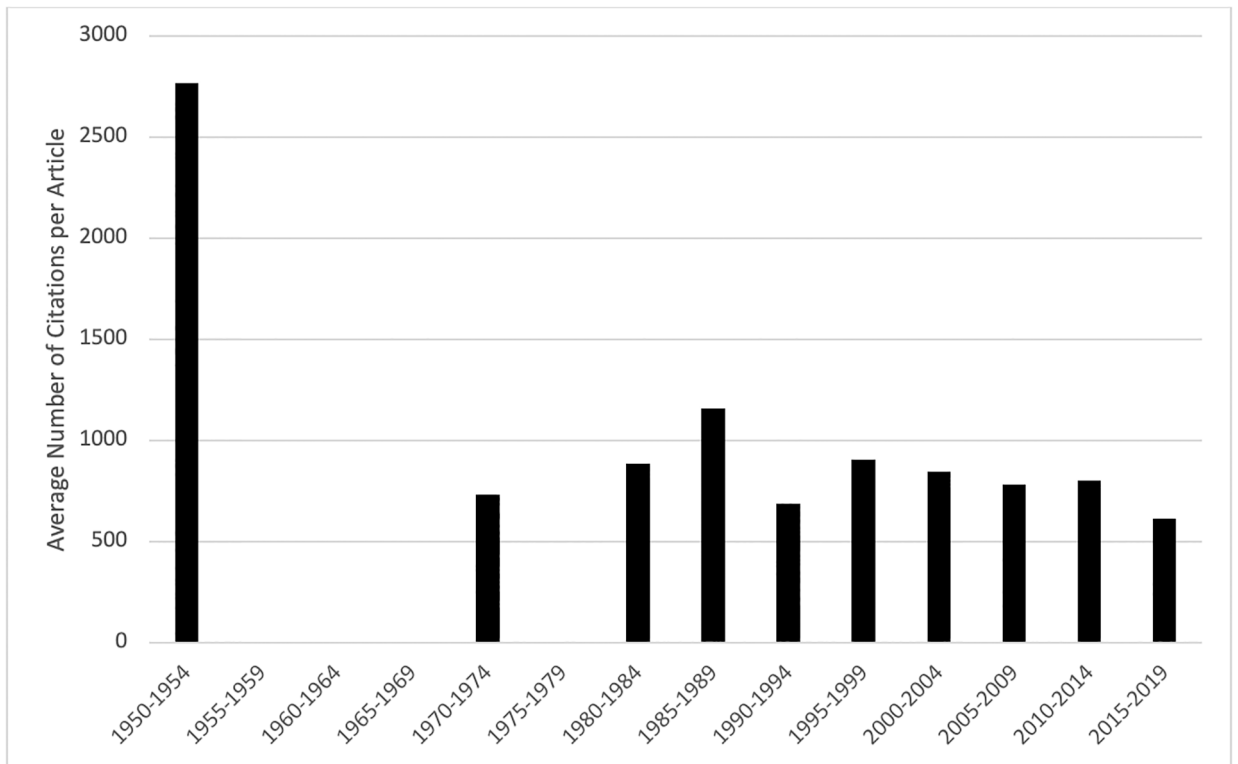


Figure 2.
Average number of citations per paper over time.

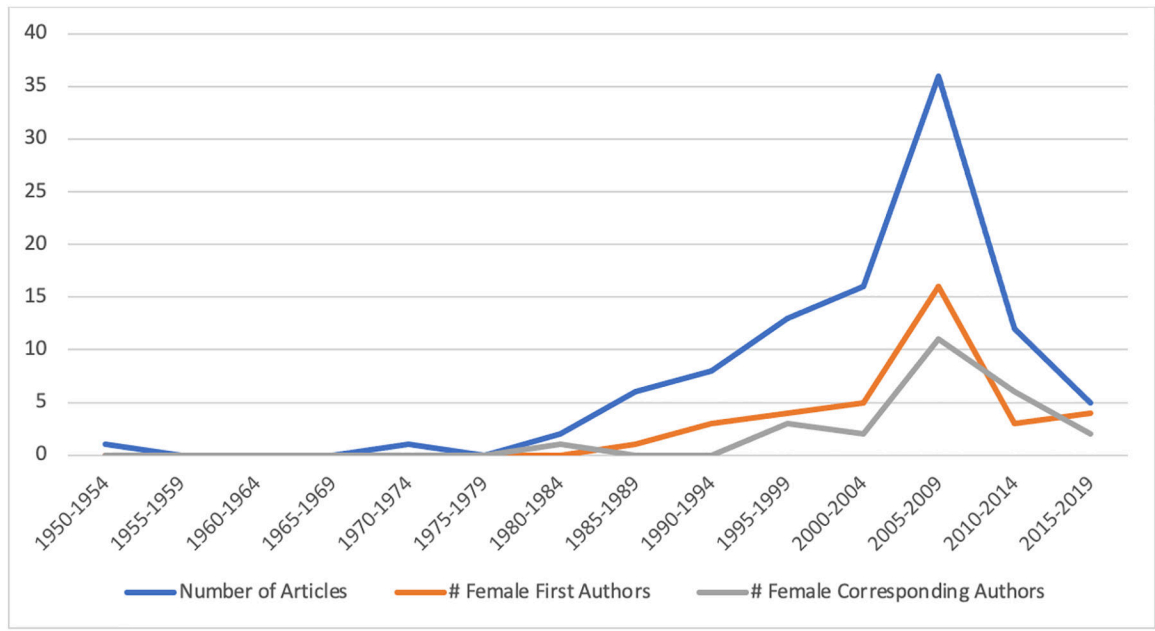


Figure 3. Differences over time in female authorship in the top 100 most-cited articles.

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Table 1.

Complete list of 100 most cited head and neck surgery articles.

Rank	First Author	Year	Title	Journal	Citations
1	Slaughter ¹⁰	1953	“Field cancerization” in oral stratified squamous epithelium. Clinical implications of multicentric origin	Cancer	2764
2	House ²⁶	1985	Facial nerve grading system	Oto-HNS	2622
3	Chaturvedi ¹²	2011	Human papillomavirus and rising oropharyngeal cancer incidence in the United States	JCO	2402
4	Gillison ²⁷	2000	Evidence for a causal association between human papillomavirus and a subset of head and neck cancers	JNCI	2371
5	Fakhry ²⁸	2008	Improved survival of patients with human papillomavirus-positive head and neck squamous cell carcinoma in a prospective clinical trial	JNCI	2009
6	Warnakulasuriya ²⁹	2009	Global epidemiology of oral and oropharyngeal cancer	Oral Oncology	1976
7	Al-Sarraf ¹⁴	1998	Chemoradiotherapy versus radiotherapy in patients with advanced nasopharyngeal cancer: Phase III randomized Intergroup study 0099	JCO	1775
8	Kreimer ³⁰	2005	Human papillomavirus types in head and neck squamous cell carcinomas worldwide: A systemic review	CEBP	1614
9	Blot ³¹	1988	Smoking and Drinking in Relation to Oral and Pharyngeal Cancer	Cancer Research	1537
10	Hundahl ³²	1998	A National Cancer Data Base report on 53,856 cases of thyroid carcinoma treated in the U.S., 1985–1995	Cancer	1485
11	Adelstein ³³	2003	An intergroup phase III comparison of standard radiation therapy and two schedules of concurrent chemoradiotherapy in patients with unresectable squamous cell head and neck cancer	JCO	1310
12	Koufman ³⁴	1991	The otolaryngologic manifestations of gastroesophageal reflux disease (Gerd): A clinical investigation of 225 patients using ambulatory 24-hour ph monitoring and an experimental investigation of the role of acid and pepsin in the development of laryngeal injury	Laryngoscope	1306
13	Kimura ³⁵	2003	High prevalence of BRAF mutations in thyroid cancer: Genetic evidence for constitutive activation of the RET/PTC-RAS-BRAF signaling pathway in papillary thyroid carcinoma	Cancer Research	1286
14	Hadad ³⁶	2006	A novel reconstructive technique after endoscopic expanded endonasal approaches: Vascular pedicle nasoseptal flap	Laryngoscope	1227
15	Chaturvedi ³⁷	2008	Incidence trends for human papillomavirus-related and -unrelated oral squamous cell carcinomas in the United States	JCO	1193
16	Califano ³⁸	1996	Genetic progression model for head and neck cancer: Implications for field cancerization	Cancer Research	1152
17	Gillison ³⁹	2008	Distinct risk factor profiles for human papillomavirus type 16-positive and human papillomavirus type 16-negative head and neck cancers	JNCI	1127
18	Lefebvre ⁴⁰	1996	Larynx preservation in pyriform sinus cancer: Preliminary results of a European organization for research and treatment of cancer phase III trial	JNCI	1118
19	Bernier ⁴¹	2005	Defining risk levels in locally advanced head and neck cancers: A comparative analysis of concurrent postoperative radiation plus chemotherapy trials of the EORTC (#22931) and RTOG (#9501)	Head and Neck	1097
20	Ang ⁴²	2002	Impact of epidermal growth factor receptor expression on survival and pattern of relapse in patients with advanced head and neck carcinoma	Cancer Research	1020
21	Spiro ⁴³	1986	Salivary neoplasms: overview of a 35-year experience with 2,807 patients	Oto-HNS	1004
22	Davies ⁴⁴	2014	Current thyroid cancer trends in the United States	JAMA Oto	988
23	Chang ⁴⁵	2006	The enigmatic epidemiology of nasopharyngeal carcinoma	CEBP	973
24	Machtay ⁴⁶	2008	Factors associated with severe late toxicity after concurrent chemoradiation for locally advanced head and neck cancer: An RTOG analysis	JCO	972

Rank	First Author	Year	Title	Journal	Citations
25	Grandis ⁴⁷	1998	Levels of TGF- α and EGFR protein in head and neck squamous cell carcinoma and patient survival	JNCI	949
26	Fujita ⁴⁸	1981	Surgical correction of anatomic abnormalities in obstructive sleep apnea syndrome: Uvulopalatopharyngoplasty	Oto-HNS	946
27	Calais ⁴⁹	1999	Randomized trial of radiation therapy versus concomitant chemotherapy and radiation therapy for advanced-stage oropharynx carcinoma	JNCI	943
28	Bedenne ⁵⁰	2007	Chemoradiation followed by surgery compared with chemoradiation alone in squamous cancer of the esophagus: FFCD 9102	JCO	935
29	Nikiforov ⁵¹	2016	Nomenclature revision for encapsulated follicular variant of papillary thyroid carcinoma a paradigm shift to reduce overtreatment of indolent tumors	JAMA Onc	848
30	Chaturvedi ⁵²	2013	Worldwide trends in incidence rates for oral cavity and oropharyngeal cancers	JCO	837
31	Silverman ⁵³	1984	Oral leukoplakia and malignant transformation. A follow-up study of 257 patients	Cancer	826
32	Forastiere ⁵⁴	2013	Long-term results of RTOG 91-11: A comparison of three nonsurgical treatment strategies to preserve the larynx in patients with locally advanced larynx cancer	JCO	767
33	Cohen ¹⁵	2003	BRAF mutation in papillary thyroid carcinoma	JNCI	762
34	Vermorken ⁵⁵	2007	Open-label, uncontrolled, multicenter phase II study to evaluate the efficacy and toxicity of cetuximab as a single agent in patients with recurrent and/or metastatic squamous cell carcinoma of the head and neck who failed to respond to platinum-based therapy	JCO	761
35	Hashibe ⁵⁶	2009	Interaction between tobacco and alcohol use and the risk of head and neck cancer: Pooled analysis in the international head and neck cancer Epidemiology consortium	CEBP	742
36	Chen ⁵⁷	2009	Increasing incidence of differentiated thyroid cancer in the United States, 1988-2005	Cancer	742
37	Harach ⁵⁸	1985	Occult papillary carcinoma of the thyroid. A "normal" finding in Finland. A systematic autopsy study	Cancer	740
38	Lindberg ⁵⁹	1972	Distribution of cervical lymph node metastases from squamous cell carcinoma of the upper respiratory and digestive tracts	Cancer	731
39	Soulieres ⁶⁰	2004	Multicenter phase II study of erlotinib, an oral epidermal growth factor receptor tyrosine kinase inhibitor, in patients with recurrent or metastatic squamous cell cancer of the head and neck	JCO	729
40	Grandis ⁶¹	1993	Elevated Levels of Transforming Growth Factor α and Epidermal Growth Factor Receptor Messenger RNA Are Early Markers of Carcinogenesis in Head and Neck Cancer	Cancer Research	723
41	Frisch ⁶²	2000	Human papillomavirus-associated cancers in patients with human immunodeficiency virus infection and acquired immunodeficiency syndrome	JNCI	712
42	Elisei ⁶³	2013	Cabozantinib in progressive medullary thyroid cancer	JCO	703
43	Huang ⁶⁴	1999	Epidermal growth factor receptor blockade with C225 modulates proliferation, apoptosis, and radiosensitivity in squamous cell carcinomas of the head and neck	Cancer Research	687
44	Hashibe ⁶⁵	2007	Alcohol drinking in never users of tobacco, cigarette smoking in never drinkers, and the risk of head and neck cancer: Pooled analysis in the international head and neck cancer epidemiology consortium	JNCI	685
45	Denis ⁶⁶	2004	Final results of the 94-01 French head and neck oncology and radiotherapy group randomized trial comparing radiotherapy alone with concomitant radiochemotherapy in advanced-stage oropharynx carcinoma	JCO	681
46	Gilliland ⁶⁷	1997	Prognostic factors for thyroid carcinoma: A population-based study of 15,698 cases from the Surveillance, Epidemiology and End Results (SEER) program 1973-1991	Cancer	676

Rank	First Author	Year	Title	Journal	Citations
47	Robbins ⁶⁸	2002	Neck dissection classification update: Revisions proposed by the American Head and Neck Society and the American Academy of Otolaryngology-Head and Neck Surgery	JAMA Oto	666
48	Chan ⁶⁹	1999	Cyclooxygenase-2 expression is up-regulated in squamous cell carcinoma of the head and neck	Cancer Research	661
49	Weinberger ¹⁶	2006	Molecular classification identifies a subset of human papillomavirus--associated oropharyngeal cancers with favorable prognosis	JCO	652
50	Baugh ⁷⁰	2011	Clinical practice guideline: Tonsillectomy in children	Oto-HNS	651
51	Lin ⁷¹	2003	Phase III study of concurrent chemoradiotherapy versus radiotherapy alone for advanced nasopharyngeal carcinoma: Positive effect on overall and progression-free survival	JCO	632
52	Chen ⁷²	2001	The development and validation of a dysphagia-specific quality-of-life questionnaire for patients with head and neck cancer: The M. D. Anderson Dysphagia Inventory	JAMA Oto	632
53	Forastiere ⁷³	1992	Randomized comparison of cisplatin plus fluorouracil and carboplatin plus fluorouracil versus methotrexate in advanced squamous-cell carcinoma of the head and neck: A southwest oncology group study	JCO	628
54	Park ⁷⁴	2009	Salivary microRNA: Discovery, characterization, and clinical utility for oral cancer detection	CCR	624
55	Bolger ⁷⁵	1991	Paranasal sinus bony anatomic variations and mucosal abnormalities: CT analysis for endoscopic sinus surgery	Laryngoscope	621
56	Bjordal ⁷⁶	1999	Quality of life in head and neck cancer patients: Validation of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-H and N35	JCO	608
57	Lo ⁷⁷	1999	Quantitative analysis of cell-free Epstein-Barr virus DNA in plasma of patients with nasopharyngeal carcinoma	Cancer Research	607
58	Gillison ⁷⁸	2015	Epidemiology of human papillomavirus-positive head and neck squamous cell carcinoma	JCO	603
59	Sturgis ⁷⁹	2007	Trends in head and neck cancer incidence in relation to smoking prevalence: An emerging epidemic of human papillomavirus-associated cancers?	Cancer	600
60	Randolph ⁸⁰	2011	Electrophysiologic recurrent laryngeal nerve monitoring during thyroid and parathyroid surgery: International standards guideline statement	Laryngoscope	595
61	La Vecchia ⁸¹	2015	Thyroid cancer mortality and incidence: A global overview	OJC	595
62	Boyle ⁸²	1993	The Incidence of p53 Mutations Increases with Progression of Head and Neck Cancer	Cancer Research	592
63	Shiboski ⁸³	2005	Tongue and tonsil carcinoma: Increasing trends in the U.S. population ages 20–44 years	Cancer	590
64	Smeets ¹⁸	2007	A novel algorithm for reliable detection of human papillomavirus in paraffin embedded head and neck cancer specimen	IJC	589
65	Carvalho ⁸⁴	2005	Trends in incidence and prognosis for head and neck cancer in the United States: A site-specific analysis of the SEER database	IJC	587
66	Robbins ⁸⁵	1991	Standardizing Neck Dissection Terminology: Official Report of the Academy's Committee for Head and Neck Surgery and Oncology	JAMA Oto	583
67	Rischin ⁸⁶	2010	Prognostic significance of p16INK4A and human papillomavirus in patients with oropharyngeal cancer treated on TROG 02.02 phase III trial	JCO	574
68	Näsman ⁸⁷	2009	Incidence of human papillomavirus (HPV) positive tonsillar carcinoma in Stockholm, Sweden: An epidemic of viral-induced carcinoma?	IJC	572
69	Reed ⁸⁸	1996	High frequency of p16 (CDKN2/MTS-1/INK4A) inactivation in head and neck squamous cell carcinoma	Cancer Research	568
70	Lyford-Pike ⁸⁹	2013	Evidence for a role of the PD-1:PD-L1 pathway in immune resistance of HPV-associated head and neck squamous cell carcinoma	Cancer Research	563
71	Hoffman ⁹⁰	2006	Laryngeal cancer in the United States: Changes in demographics, patterns of care, and survival	Laryngoscope	559

Rank	First Author	Year	Title	Journal	Citations
72	Aebersold ⁹¹	2001	Expression of hypoxia-inducible factor-1 α : A novel predictive and prognostic parameter in the radiotherapy of oropharyngeal cancer	Cancer Research	558
73	Cohen ⁹²	2003	Phase II trial of ZD1839 in recurrent or metastatic squamous cell carcinoma of the head and neck	JCO	557
74	Gupta-Abramson ¹³	2008	Phase II trial of sorafenib in advanced thyroid cancer	JCO	556
75	Nikiforov ⁹³	1996	Distinct pattern of ret oncogene rearrangements in morphological variants of radiation-induced and sporadic thyroid papillary carcinomas in children	Cancer Research	549
76	Kam ⁹⁴	2007	Prospective randomized study of intensity-modulated radiotherapy on salivary gland function in early-stage nasopharyngeal carcinoma patients	JCO	548
77	Chow ⁹⁵	2003	Papillary microcarcinoma of the thyroid - Prognostic significance of lymph node metastasis and multifocality	Cancer	545
78	Bjordal ⁹⁶	2000	A 12 country field study of the EORTC QLQ-C30 (version 3.0) and the head and neck cancer specific module (EORTC QLQ-H and N35) in head and neck patients	EJC	544
79	Carcangiu ⁹⁷	1985	Papillary carcinoma of the thyroid. A clinicopathologic study of 241 cases treated at the University of Florence, Italy	Cancer	540
80	Chiou ⁹⁸	2008	Positive correlations of Oct-4 and Nanog in oral cancer stem-like cells and high-grade oral squamous cell carcinoma	CCR	537
81	van der Waal ⁹⁹	2009	Potentially malignant disorders of the oral and oropharyngeal mucosa; terminology, classification and present concepts of management	Oral Oncology	536
82	Schipper ¹⁰⁰	1991	E-Cadherin Expression in Squamous Cell Carcinomas of Head and Neck: Inverse Correlation with Tumor Dedifferentiation and Lymph Node Metastasis	Cancer Research	534
83	Ragin ¹⁰¹	2007	Survival of squamous cell carcinoma of the head and neck in relation to human papillomavirus infection: Review and meta-analysis	IJC	528
84	Peters ¹⁰²	2010	Critical impact of radiotherapy protocol compliance and quality in the treatment of advanced head and neck cancer: Results from TROG 02.02	JCO	527
85	Jacobs ¹⁰³	1992	A phase III randomized study comparing cisplatin and fluorouracil as single agents and in combination for advanced squamous cell carcinoma of the head and neck	JCO	526
86	Kozaki ¹⁰⁴	2008	Exploration of tumor-suppressive microRNAs silenced by DNA hypermethylation in oral cancer	Cancer Research	526
87	Cohen ¹⁰⁵	2008	Axitinib is an active treatment for all histologic subtypes of advanced thyroid cancer: Results from a phase II study	JCO	525
88	Kalyankrishna ¹⁰⁶	2006	Epidermal growth factor receptor biology in head and neck cancer	JCO	524
89	Wee ¹⁰⁷	2005	Randomized trial of radiotherapy versus concurrent chemoradiotherapy followed by adjuvant chemotherapy in patients with American Joint Committee on Cancer/International Union Against Cancer stage III and IV nasopharyngeal cancer of the endemic variety	JCO	523
90	Chi ¹⁰⁸	2015	Oral cavity and oropharyngeal squamous cell carcinoma - An update	CA CJC	519
91	Licitra ¹⁰⁹	2006	High-risk human papillomavirus affects prognosis in patients with surgically treated oropharyngeal squamous cell carcinoma	JCO	515
92	Chow ¹¹⁰	2016	Antitumor activity of pembrolizumab in biomarker-unselected patients with recurrent and/or metastatic head and neck squamous cell carcinoma: Results from the phase Ib KEYNOTE-012 expansion cohort	JCO	511
93	Tubiana ¹¹¹	1985	Long-term results and prognostic factors in patients with differentiated thyroid carcinoma	Cancer	511
94	Ang ¹¹²	2014	Randomized phase III trial of concurrent accelerated radiation plus cisplatin with or without cetuximab for stage III to IV head and neck carcinoma: RTOG 0522	JCO	510

Rank	First Author	Year	Title	Journal	Citations
95	Yassa ¹¹³	2007	Long-term assessment of a multidisciplinary approach to thyroid nodule diagnostic evaluation	Cancer	510
96	Lundgren ¹¹⁴	2006	Clinically significant prognostic factors for differentiated thyroid carcinoma: A population-based, nested case-control study	Cancer	506
97	Kumar ¹¹⁵	2008	EGFR, p16, HPV titer, Bcl-xL and p53, sex, and smoking as indicators of response to therapy and survival in oropharyngeal cancer	JCO	505
98	O'Malley ¹¹⁶	2006	Transoral robotic surgery (TORS) for base of tongue neoplasms	Laryngoscope	503
99	Mehanna ¹¹⁷	2013	Prevalence of human papillomavirus in oropharyngeal and nonoropharyngeal head and neck cancer - Systematic review and meta-analysis of trends by time and region	H&N	503
100	Kebebew ¹¹⁸	2000	Medullary thyroid carcinoma: Clinical characteristics, treatment, prognostic factors, and a comparison of staging systems	Cancer	501

Abbreviations: OTO-HNS: Otolaryngology-Head and Neck Surgery; JCO: Journal of Clinical Oncology; JNCI: Journal of the National Cancer Institute; CEBP: Cancer Epidemiology, Biomarkers, & Prevention; H&N: Head and Neck; JAMA Onc: JAMA Oncology; CA CJC: CA Cancer Journal for Clinicians; CCR: Clinical Cancer Research; JAMA Oto: Archives of Otolaryngology-Head and Neck Surgery/JAMA Otolaryngology-Head and Neck Surgery; IJC: International Journal of Cancer; EJC: European Journal of Cancer

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Table 2.

Distribution of article rank between journals on the top-100 list.

JOURNAL	ARTICLE RANK		TOTAL
	First 50	Last 50	
CA CJC	0	1	1
Cancer	7	8	15
Cancer Research	7	8	15
CCR	0	2	2
CEBP	3	0	3
EJC	0	1	1
H&N	1	1	2
IJC	0	5	5
JAMA Onc	1	0	1
JAMA Oto	2	2	4
JCO	13	17	30
JNCI	9	0	9
Laryngoscope	2	4	6
Oral Oncology	1	1	2
Oto-HNS	4	0	4

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Table 3.

Article topic, nature of study, and geographic origin by journal.

JOURNAL	ARTICLE TOPIC		NATURE OF STUDY		ARTICLE ORIGIN		TOTAL
	Cancer	Non-Cancer	Basic	Clinical	US	Non-US	
CA CJC	1	0	0	1	1	0	1
Cancer	15	0	2	13	10	5	15
Cancer Research	15	0	11	4	11	4	15
CCR	2	0	2	0	1	1	2
CEBP	3	0	0	3	1	2	3
EJC	1	0	0	1	0	1	1
H&N	2	0	0	2	0	2	2
IJC	5	0	1	4	1	4	5
JAMA Onc	1	0	0	1	1	0	1
JAMA Oto	2	2	0	4	4	0	4
JCO	29	1	2	28	19	11	30
JNCI	9	0	1	8	6	3	9
Laryngoscope	2	4	0	6	5	1	6
Oral Oncology	1	1	0	2	0	2	2
Oto-HNS	0	4	0	4	4	0	4

Table 4.

Comparison of male and female authorship in the top 100 over time.

	Male First Author	Female First Author	Male Corresponding Author	Female Corresponding Author
1950–1954	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
1955–1959	-	-	-	-
1960–1964	-	-	-	-
1965–1969	-	-	-	-
1970–1974	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
1975–1979	-	-	-	-
1980–1984	2 (100.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)
1985–1989	5 (83.3%)	1 (16.7%)	6 (100.0%)	0 (0.0%)
1990–1994	5 (62.5%)	3 (37.5%)	8 (100.0%)	0 (0.0%)
1995–1999	9 (69.2%)	4 (30.8%)	10 (76.9%)	3 (23.1%)
2000–2004	11 (68.8%)	5 (31.3%)	14 (87.5%)	2 (23.1%)
2005–2009	20 (55.6%)	16 (44.4%)	25 (69.4%)	11 (30.6%)
2010–2014	9 (75.0%)	3 (25.0%)	6 (50.0%)	6 (50.0%)
2015–2019	1 (20.0%)	4 (80.0%)	3 (60.0%)	2 (40.0%)