

Most Cited Articles in Head and Neck Oncology

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Abstract

Objectives: The number of citations an article receives is an important indication of its impact. The main objectives of this investigation provide readers with a practical guide in evaluating head and neck oncology literature and determine the characteristics of trends in ORL. **Methods:** This was a retrospective bibliometric analysis that did not involve human participant. The Thomson Reuters Web of Science was searched to determine the citations of all published HNO articles. Most cited 300 article analyzed and a total of 100 articles were included in our investigation under the topic search “Head AND NECK AND (cancer OR carcinoma OR oncology).” Articles include malignancies other than head and neck are excluded. The top 100 cited articles were selected and analyzed by 2 independent investigators. Country, Institution, First Author, Journal name, study design, cites per year information gathered and analyzed. **Results:** The journal with the highest number of top 100 cited articles was New England Journal Of Medicine with 19 paper, followed by The Journal of Clinical Oncology(17) and Cancer Research (12). The top article on the list (Radiotherapy plus cetuximab for squamous cell carcinoma of the head and neck-NEJM) has 2243 citations. A statistically significant association was found between the journal impact factor and the number of top 100 cited articles ($P < .05$). The United States had the highest number of articles (63). John Hopkins is differed from other institutions with 15 contributing articles. **Conclusion:** Our analysis provides an insight into the citation frequency of top cited articles published in HNO to help recognize the quality of the works, discoveries and the trends steering the study of HNO. This is also a modern reading list for young HNO scientist.

Keywords

citation, head and neck, literature, most cited, oncology

Introduction

The incidence and prevalence rates of head and neck cancers have been increasing over recent decades. Our experiences with head and neck cancers remain limited, and the indications for surgery or choices of treatment like chemotherapy and radiotherapy are still controversial. Every year a sizable number of articles about head and neck cancers are published, but only a small number of them become well established in the literature. For that reason, bibliometric studies are important tools for understanding trending topics relating to different specialties over the years.

Citation analysis has been widely used for evaluating the academic importance of an article. Bibliometric studies examine the frequency and patterns of citations in articles. The number of times an article is cited provides useful information for evaluating its influence in the field. The greater the number of times an article is cited, the greater the effectiveness and validity we can surmise that the article and its authors have contributed.

The purpose of this article is to identify the 100 most cited articles about head and neck oncology published over the years and to analyze the characteristics of these articles, as to number of citations, citation density, authors, country of origin,

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institution, journals, topic, and the like. The main objective of this investigation is to provide readers a practical guide for evaluating head and neck oncology literature and help them determine the factors that generate high citation numbers. This will be the first bibliographic study to address head and neck oncology papers according to their ranking by citation numbers.

Material and Methods

In March 2017, ISI Web of Science (Thompson Reuters), a research platform that provides bibliographic database services and ranks journals according to impact factor, was used to search for papers using the search topics “head and neck and carcinoma or cancer or oncology,” within a time range of 1945 to 2017.

The results from 50 629 papers were organized from most cited to least. The first 300 articles were analyzed, and 179 articles related to cancers in regions other than head and neck (nasopharynx, oral cavity, oropharynx, pharynx, hypopharynx, larynx) were excluded from the study. The 100 articles with the highest numbers of the 111 head and neck related articles were included in this study.

The top 100 cited articles were thus selected and analyzed by 2 independent investigators who read the abstracts. The articles were analyzed, and the authors' country, the publication date, journal name, institution, first and senior authors, study design, or research type (clinical experience, clinical review, meta-analysis, case report, original article) and the total number of citations and citations per year (citation density) were gathered. Either one or more of the major topics of the papers were categorized (radiotherapy, human papillomavirus [HPV], surgery, epidemiology, molecular, survival prognosis, quality of life, and chemotherapy).

Results

The overall number of citations of the top 100 articles ranged from 339 to 2464. The publication years of the top 100 articles spanned from 1980 to 2011, the earliest paper being by Swenberg et al¹ and the most recent, published in November 2011, by Chaturvedi et al.² The majority of the articles were published from 1992 to 2008 (87), and only 8 articles were published after 2010 (Table 1).

The 2010s had the greatest mean number of citations per publication (816.6), followed by the 2000s (679.3). Most citations were made after 2010 with 38 106 total, despite only 7 years being included, whereas in the 2000s there were 23 281 citations in those 10 years. Citation density averages of the 2010s were found to be 127.3, and in other decades the averages found were 57.1 in the 2000s, 27.1 in the 1990s, and 11.2 in the 1980s (Figure 1).

The articles were mostly nonspecific as to tumor site (73%), with oropharynx being the most common tumor site in the list (with 9 papers), followed by nasopharynx (n: 7), oral cavity (n: 7), larynx (n: 3), and hypopharynx (n: 1). The predominant

topic was survival and prognosis (61), followed by chemotherapy (48) and radiotherapy (36). The other topics of papers in this study were epidemiology (30%), quality of life (23), HPV (13), and surgery (9).

All articles in the top 100 were written in English. The top 100 papers were published in 22 journals, with the top 5 journals publishing 65% of the articles. Most of the articles were published in the New England Journal of Medicine, with 19 papers, followed by the Journal of Clinical Oncology (17) and Cancer Research (12) (Table 2).

Articles originated from 14 countries. The number of articles by country of origin was led by the United States with 63 papers, followed by France (n = 9), China (n = 5), Belgium (n = 5), Switzerland (n = 3), and Germany (n = 3; Figure 2). There were 62 institutions responsible for the top cited papers, with Johns Hopkins University accounting for the most papers—15 publications in the top 100, followed by Duke University (4) and the University of Michigan (4). The other 5 institution contributed 3 publications each (Table 3).

Eighty-one first authors contributed to the top 100 papers. Fifteen authors contributed more than once, 2 of whom were credited with 3 publications each, and only 1 author, Brizel et al, had 4 publications in the top 100.

Within the 100 articles, there were 94 clinical studies and 6 basic studies. One of 6 basic studies was an animal study about cancer stem cells¹¹; the rest are in vitro experiments.

When the articles are ranked by citation density (total number of citations/years since publication), Ang et al are at the top of the list with their paper about HPV and survival⁴ (236.2), followed by Bonner et al³ (224) and Stransky et al²⁰ (144.8). Of the top 10 most densely cited articles, 3 of them were published in 2011 and the most recent article was in fourth place (Table 4).

Discussion

The number of times an article is cited shows the effect of the article on that scientific field. Although number of citations is not the perfect way of gauging a paper's quality or its contribution to current knowledge, it is an obvious indicator of being read and mentioned in the scientific field. This kind of bibliographic analysis also serves as a modern reading list for junior scientists and residents.¹⁰⁰

The most referenced study includes the evaluation of radiotherapy and the effectiveness of cetuximab on locoregionally advanced squamous cell carcinoma of the head and neck. In this study, Bonner noted that radiotherapy plus cetuximab therapy has a longer duration of control of locoregional disease and prolonged overall survival rates, as compared with patients treated with radiotherapy alone.³

The second most referenced study published by Ang et al evaluates the effect of HPV status on the survival rates of patients with oropharyngeal cancers. The study reveals that HPV status is a strong and independent prognostic factor for survival among patients with oropharyngeal cancer.⁴ The third most cited paper was the meta-analysis of updated data on

Table 1. Top 100 List of Most Cited Papers in HNO.

Most cited rank	Citation density rank	Title	First author	Published year	Citation density	Total citations
1	2	Radiotherapy Plus Cetuximab for Squamous-Cell Carcinoma Of The Head And Neck ³	Bonner	2006	224.00	2464
2	1	Human Papillomavirus and Survival of Patients With Oropharyngeal Cancer ⁴	Ang	2010	236.29	1654
3	16	Chemotherapy Added to Locoregional Treatment for Head And Neck Squamous-Cell Carcinoma: Three Meta-Analyses of Updated Individual Data ⁵	Pignon	2000	87.82	1493
4	18	Evidence for a Causal Association Between Human Papillomavirus and a Subset of Head and Neck Cancers ⁶	Gillison	2000	84.65	1439
5	13	Concurrent Chemotherapy and Radiotherapy for Organ Preservation in Advanced Laryngeal Cancer ⁷	Forastiere	2003	100.29	1404
6	29	Head and Neck Cancer ⁸	Vokes	1993	55.50	1332
7	14	Postoperative Concurrent Radiotherapy and Chemotherapy for High-Risk Squamous-Cell Carcinoma of The Head And Neck ⁹	Cooper	2004	92.92	1208
8	6	Case-Control Study of Human Papillomavirus and Oropharyngeal Cancer ¹⁰	D'Souza	2007	119.80	1198
9	10	Identification of a Subpopulation of Cells With Cancer Stem Cell Properties in Head and Neck Squamous Cell Carcinoma ¹¹	Prince	2007	114.80	1148
10	17	Postoperative Irradiation With Or Without Concomitant Chemotherapy For Locally Advanced Head And Neck Cancer ¹²	Bernier	2004	87.23	1134
11	45	Prevention of Second Primary Tumors With Isotretinoin in Squamous-Cell Carcinoma of The Head And Neck ¹³	Hong	1990	41.59	1123
12	44	Induction Chemotherapy Plus Radiation Compared With Surgery Plus Radiation in Patients With Advanced Laryngeal-Cancer ¹⁴	Wolf	1991	41.77	1086
13	7	Improved Survival of Patients With Human Papillomavirus-Positive Head and Neck Squamous Cell Carcinoma in a Prospective Clinical Trial ¹⁵	Fakhry	2008	119.67	1077
14	28	Chemoradiotherapy Versus Radiotherapy in Patients With Advanced Nasopharyngeal Cancer: Phase III Randomized Intergroup Study 0099 ¹⁶	Al-Sarraf	1998	56.53	1074
15	9	Platinum-Based Chemotherapy Plus Cetuximab in Head and Neck Cancer ¹⁷	Vermorken	2008	115.89	1043
16	8	Meta-Analysis of Chemotherapy in Head and Neck Cancer (Mach-Nc): An Update on 93 Randomised Trials and 17,346 Patients ¹⁸	Pignon	2009	116.63	933
17	22	Human Papillomavirus Types in Head and Neck Squamous Cell Carcinomas Worldwide: A Systematic Review ¹⁹	Kreimer	2005	75.50	906
18	3	The Mutational Landscape of Head and Neck Squamous Cell Carcinoma ²⁰	Stransky	2011	144.83	869
19	48	Genetic Progression Model for Head and Neck Cancer: Implications for Field Cancerization ²¹	Califano	1996	40.62	853
20	27	Erythropoietin to Treat Head and Neck Cancer Patients With Anaemia Undergoing Radiotherapy: Randomised, Double-Blind, Placebo-Controlled Trial ²²	Henke	2003	60.86	852
21	4	Human Papillomavirus and Rising Oropharyngeal Cancer Incidence in the United States ²	Chaturvedi	2011	140.83	845
22	33	A Radiation Therapy Oncology Group (Rtog) Phase III Randomized Study to Compare Hyperfractionation and Two Variants of Accelerated Fractionation to Standard Fractionation Radiotherapy for Head and Neck Squamous Cell Carcinomas: First Report of Rtog 9003 ²³	Fu	2000	49.53	842
23	32	Head and Neck Cancer ²⁴	Forastiere	2001	51.50	824
24	47	Hyperfractionated Irradiation With Or Without Concurrent Chemotherapy For Locally Advanced Head And Neck Cancer ²⁵	Brizel	1998	41.21	783
25	38	A Controlled Trial Of Intratumoral Onyx-015, A Selectively-Replicating Adenovirus, In Combination With Cisplatin And 5-Fluorouracil In Patients With Recurrent Head And Neck Cancer ²⁶	Khuri	2000	45.53	774
26	21	Cisplatin And Fluorouracil Alone Or With Docetaxel In Head And Neck Cancer ²⁷	Posner, Marshall	2007	77.30	773
27	51	Tumor Hypoxia Adversely Affects The Prognosis Of Carcinoma Of The Head And Neck ²⁸	Brizel	1997	38.60	772

(continued)

Table I. (continued)

Most cited rank	Citation density rank	Title	First author	Published year	Citation density	Total citations
28	55	Pretreatment Oxygenation Predicts Radiation Response In Advanced Squamous Cell Carcinoma Of The Head And Neck ²⁹	Nordsmark	1996	36.33	763
29	30	Intergroup Phase III Comparison Of Standard Radiation Therapy And Two Schedules Of Concurrent Chemoradiotherapy In Patients With Unresectable Squamous Cell Head And Neck Cancer ³⁰	Adelstein	2003	53.71	752
30	57	Larynx Preservation In Pyriform Sinus Cancer: Preliminary Results Of A European Organization For Research And Treatment Of Cancer Phase III Trial ³¹	Lefebvre	1996	35.67	749
31	5	The Molecular Biology Of Head And Neck Cancer ³²	Leemans, C. Rene	2011	123.50	741
32	12	Radiotherapy Plus Cetuximab For Locoregionally Advanced Head And Neck Cancer: 5-Year Survival Data From A Phase III Randomised Trial, And Relation Between Cetuximab-Induced Rash And Survival ³	Bonner	2010	104.43	731
33	15	Global Epidemiology Of Oral And Oropharyngeal Cancer ³³	Warnakulasuriya	2009	90.00	720
34	24	Cisplatin, Fluorouracil, And Docetaxel In Unresectable Head And Neck Cancer ³⁴	Vermorken	2007	70.00	700
35	36	Impact Of Epidermal Growth Factor Receptor Expression On Survival And Pattern Of Relapse In Patients With Advanced Head And Neck Carcinoma ³⁵	Ang	2002	46.20	693
36	53	Randomized Trial Of Radiation Therapy Versus Concomitant Chemotherapy And Radiation Therapy For Advanced-Stage Oropharynx Carcinoma ³⁶	Calais	1999	37.94	683
37	11	Exome Sequencing Of Head And Neck Squamous Cell Carcinoma Reveals Inactivating Mutations In Notch1 ³⁷	Agrawal	2011	110.00	660
38	23	Incidence Trends For Human Papillomavirus-Related And -Unrelated Oral Squamous Cell Carcinomas In The United States ³⁸	Chaturvedi	2008	71.67	645
39	37	Human Papillomavirus And Oral Cancer: The International Agency For Research On Cancer Multicenter Study ³⁹	Herrero	2003	45.93	643
40	25	Distinct Risk Factor Profiles For Human Papillomavirus Type 16-Positive And Human Papillomavirus Type 16-Negative Head And Neck Cancers ⁴⁰	Gillison	2008	68.22	614
41	59	Levels Of Tgf-Alpha And Egfr Protein In Head And Neck Squamous Cell Carcinoma And Patient Survival ⁴¹	Grandis	1998	31.84	605
42	26	Head And Neck Cancer ⁴²	Argiris	2008	66.33	597
43	49	Intensity-Modulated Radiotherapy In The Treatment Of Nasopharyngeal Carcinoma: An Update Of The Ucsf Experience ⁴³	Lee	2002	38.80	582
44	19	Hpv-Associated Head And Neck Cancer: A Virus-Related Cancer Epidemic ⁴⁴	Marur	2010	81.00	567
45	61	Cyclooxygenase-2 Expression Is Up-Regulated In Squamous Cell Carcinoma Of The Head And Neck ⁴⁵	Chan	1999	31.11	560
46	65	Dose, Volume, And Function Relationships In Parotid Salivary Glands Following Conformal And Intensity-Modulated Irradiation Of Head And Neck Cancer ⁴⁶	Eisbruch	1999	29.72	535
47	68	Epidermal Growth Factor Receptor Blockade With C225 Modulates Proliferation, Apoptosis, And Radiosensitivity In Squamous Cell Carcinomas Of The Head And Neck ⁴⁷	Huang	1999	29.44	530
48	35	Hyperfractionated Or Accelerated Radiotherapy In Head And Neck Cancer: A Meta-Analysis ⁴⁸	Bourhis	2006	47.73	525
49	76	Molecular Assessment Of Histopathological Staging In Squamous-Cell Carcinoma Of The Head And Neck ⁴⁹	Brennan	1995	23.82	524
50	82	The Incidence Of P53 Mutations Increases With Progression Of Head And Neck-Cancer ⁵⁰	Boyle	1993	21.71	521
51	83	Elevated Levels Of Transforming Growth-Factor-Alpha And Epidermal Growth-Factor Receptor Messenger-Rna Are Early Markers Of Carcinogenesis In Head And Neck-Cancer ⁵¹	Grandis	1993	21.42	514

(continued)

Table I. (continued)

Most cited rank	Citation density rank	Title	First author	Published year	Citation density	Total citations
52	86	E-Cadherin Expression In Squamous-Cell Carcinomas Of Head And Neck - Inverse Correlation With Tumor Dedifferentiation And Lymph-Node Metastasis ⁵²	Schipper	1991	19.77	514
53	60	Human Papillomavirus Infection As A Risk Factor For Squamous-Cell Carcinoma Of The Head And Neck. ⁵³	Mork	2001	31.81	509
54	41	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 A1: Bq101 ⁵⁴	Bernier	2005	41.92	503
55	50	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 ⁵⁵	Soulieres	2004	38.69	503
56	42	Phase III Randomized Trial Of Cisplatin Plus Placebo Compared With Cisplatin Plus Cetuximab In Metastatic/Recurrent Head And Neck Cancer: An Eastern Cooperative Oncology Group Study ⁵⁶	Burtness	2005	41.83	502
57	46	Prognostic Value Of Tumor Oxygenation In 397 Head And Neck Tumors After Primary Radiation Therapy. An International Multi-Center Study ⁵⁷	Nordsmark	2005	41.33	496
58	79	High Frequency Of P16 (Cdkn2/Mts-1/Ink4a) Inactivation In Head And Neck Squamous Cell Carcinoma ⁵⁸	Reed	1996	22.90	481
59	40	The Enigmatic Epidemiology Of Nasopharyngeal Carcinoma ⁵⁹	Chang	2006	43.18	475
60	80	Microsatellite Alterations In Serum Dna Of Head And Neck Cancer Patients ⁶⁰	Nawroz	1996	22.57	474
61	89	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 ⁶¹	Forastiere	1992	18.96	474
62	71	Phase III Randomized Trial Of Amifostine As A Radioprotector In Head And Neck Cancer ⁶²	Brizel	2000	27.65	470
63	31	Factors Associated With Severe Late Toxicity After Concurrent Chemoradiation For Locally Advanced Head And Neck Cancer: An Rtog Analysis ⁶³	Machtay	2008	51.89	467
64	20	Parotid-Sparing Intensity Modulated Versus Conventional Radiotherapy In Head And Neck Cancer (Parsport): A Phase III Multicentre Randomised Controlled Trial ⁶⁴	Nutting	2011	77.67	466
65	90	Hyperfractionation Versus Conventional Fractionation In Oropharyngeal Carcinoma - Final Analysis Of A Randomized Trial Of The Eortc Cooperative Group Of Radiotherapy ⁶⁵	Horiot	1992	18.60	465
66	58	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 ⁶⁶	Denis	2004	34.85	453
67	70	Expression Of Hypoxia-Inducible Factor-1 Alpha: A Novel Predictive And Prognostic Parameter In The Radiotherapy Of Oropharyngeal Cancer ⁶⁷	Aebersold	2001	27.94	447
68	78	Simultaneous Radiochemotherapy Versus Radiotherapy Alone In Advanced Head And Neck Cancer: A Randomized Multicenter Study ⁶⁸	Wendt	1998	23.26	442
69	34	Mature Mir-184 As Potential Oncogenic MicroRNA Of Squamous Cell Carcinoma Of Tongue ⁶⁹	Wong	2008	49.00	441
70	95	Standardizing Neck Dissection Terminology - Official Report Of The Academy A1: Bq101-For-Head-And-Neck-Surgery-And-Oncology ⁷⁰	Robbins	1991	16.88	439
71	69	Oral Cancer And Precancerous Lesions ⁷¹	Neville	2002	28.80	432
72	88	Association Between Cigarette-Smoking And Mutation Of The P53 Gene In Squamous-Cell Carcinoma Of The Head And Neck ⁷²	Brennan	1995	19.59	431
73	52	Molecular Classification Identifies A Subset Of Human Papillomavirus-Associated Oropharyngeal Cancers With Favorable Prognosis ⁷³	Weinberger	2006	38.55	424

(continued)

Table I. (continued)

Most cited rank	Citation density rank	Title	First author	Published year	Citation density	Total citations
74	43	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 ⁷⁴	Vermorken	2007	41.80	418
75	66	Mucositis Incidence, Severity And Associated Outcomes In Patients With Head And Neck Cancer Receiving Radiotherapy With Or Without Chemotherapy: A Systematic Literature Review ⁷⁵	Trotti	2003	29.71	416
76	100	Induction Of Squamous-Cell Carcinomas Of The Rat Nasal Cavity By Inhalation Exposure To Formaldehyde Vapor ¹	Swenberg	1980	11.24	416
77	67	Phase II Trial Of Zd1839 In Recurrent Or Metastatic Squamous Cell Carcinoma Of The Head And Neck ⁷⁶	Cohen	2003	29.50	413
78	91	Betel Quid Chewing, Cigarette-Smoking And Alcohol-Consumption Related To Oral-Cancer In Taiwan ⁷⁷	Ko	1995	18.45	406
79	39	Recent Advances In Head And Neck Cancer ⁷⁸	Haddad	2008	44.67	402
80	96	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 ⁷⁹	Jacobs	1992	15.92	398
81	97	Retrospective Analysis Of 5037 Patients With Nasopharyngeal Carcinoma Treated During 1976-1985 - Overall Survival And Patterns Of Failure ⁸⁰	Lee	1992	15.80	395
82	81	Gene Promoter Hypermethylation In Tumors And Serum Of Head And Neck Cancer Patients ⁸¹	Sanchez-Cespedes	2000	22.24	378
83	77	Xerostomia And Its Predictors Following Parotid-Sparing Irradiation Of Head-And-Neck Cancer ⁸²	Eisbruch	2001	23.31	373
84	74	Neck Dissection Classification Update - Revisions Proposed By The American Head And Neck Society And The American Academy Of Otolaryngology-Head And Neck Surgery ⁸³	Robbins	2002	24.73	371
85	63	Tongue And Tonsil Carcinoma - Increasing Trends In The Us Population Ages 20-44 Years ⁸⁴	Shiboski	2005	30.83	370
86	85	Oxygenation Of Head And Neck Cancer: Changes During Radiotherapy And Impact On Treatment Outcome ⁸⁵	Brizel	1999	20.50	369
87	54	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 ⁸⁶	Hashibe	2007	36.50	365
88	99	Smoking And Drinking In Relation To Cancers Of The Oral Cavity, Pharynx, Larynx, And Esophagus In Northern Italy ⁸⁷	Franceschi	1990	13.52	365
89	73	Five Compared With Six Fractions Per Week Of Conventional Radiotherapy Of Squamous-Cell Carcinoma Of Head And Neck: Dahanca 6&7 Randomised Controlled Trial ⁸⁸	Overgaard	2003	25.64	359
90	94	Frequent Microsatellite Alterations At Chromosomes 9p21 And 3p14 In Oral Premalignant Lesions And Their Value In Cancer Risk Assessment ⁸⁹	Mao	1996	17.10	359
91	56	A Novel Algorithm For Reliable Detection Of Human Papillomavirus In Paraffin Embedded Head And Neck Cancer Specimen ⁹⁰	Smeets	2007	35.70	357
92	92	Accelerated Fractionation (Af) Compared To Conventional Fractionation (Cf) Improves Loco-Regional Control In The Radiotherapy Of Advanced Head And Neck Cancers: Results Of The Eortc 22851 Randomized Trial ⁹¹	Horiot	1997	17.85	357
93	87	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 & N35 ⁹²	Bjordal	1999	19.72	355
94	93	A Randomised Multicentre Trial Of Chart Versus Conventional Radiotherapy In Head And Neck Cancer ⁹³	Dische	1997	17.40	348

(continued)

Table 1. (continued)

Most cited rank	Citation density rank	Title	First author	Published year	Citation density	Total citations
95	72	Tumor Volume In Pharyngolaryngeal Squamous Cell Carcinoma: Comparison At Ct, Mr Imaging, And Fdg Pet And Validation With Surgical Specimen ⁹⁴	Daisne	2004	26.69	347
96	75	Ct-Based Delineation Of Lymph Node Levels And Related Ctvs In The Node-Negative Neck: Dahanca, Eortc, Gortec, Ncic, Rtog Consensus Guidelines ⁹⁵	Gregoire	2003	24.64	345
97	98	Clonal Proliferations Of Cells Infected With Epstein-Barr-Virus In Preinvasive Lesions Related To Nasopharyngeal Carcinoma ⁹⁶	Pathmanathan	1995	15.64	344
98	62	Xerostomia And Quality Of Life After Intensity-Modulated Radiotherapy Vs. Conventional Radiotherapy For Early-Stage Nasopharyngeal Carcinoma: Initial Report On A Randomized Controlled Clinical Trial ⁹⁷	Pow	2006	31.09	342
99	84	A Prospective Study Of Salivary Function Sparing In Patients With Head-And-Neck Cancers Receiving Intensity-Modulated Or Three-Dimensional Radiation Therapy: Initial Results ⁹⁸	Chao	2001	21.38	342
100	64	Prospective Randomized Study Of Intensity-Modulated Radiotherapy On Salivary Gland Function In Early-Stage Nasopharyngeal Carcinoma Patients ⁹⁹	Michael	2007	30.82	339

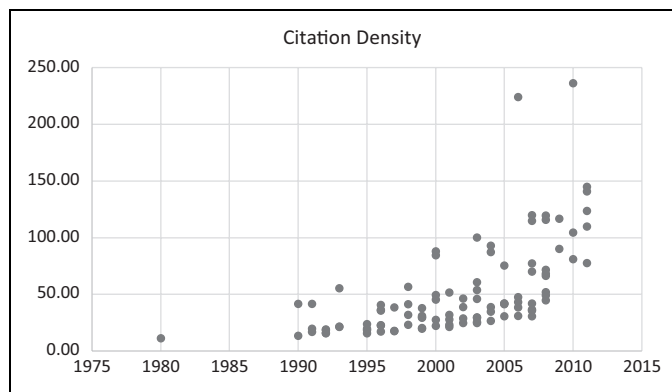


Figure 1. Distribution of citation density of papers by publishing year.

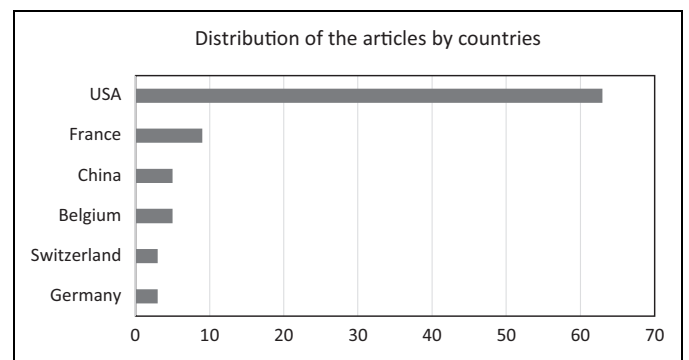


Figure 2. Distribution of the articles by countries.

Table 2. Top Journals of Publication.

Name of journal	Number of articles
New England Journal of Medicine	19
Journal of Clinical Oncology	17
Cancer Research	12
Radiotherapy and Oncology	9
International Journal of Radiation Oncology Biology Physics	8
Journal of the National Cancer Institute	8

Table 3. Top Institutions of Origin of Papers.

Institution	Country	Number of articles
Johns Hopkins University	United States	15
University of Michigan, Ann Arbor	United States	4
Duke University	United States	4
Antwerp University Hospital	Belgium	3
University of Pittsburgh Medical College	United States	3
University of California-San Francisco	United States	3
MD Anderson	United States	3
Institute Gustave-Roussy	France	3
Hong Kong Cancer Institute	China	3

individuals with the addition of chemotherapy to the locoregional treatment of head and neck squamous cell carcinomas. According to the publication of Pignon, meta-analysis showed only a small but statistically significant survival benefit in favor of chemotherapy; routine use of chemotherapy is controversial.⁵

The majority of the articles (n: 63) originated from the United States. The United States being the most productive country among most cited articles is consistent with the literature in other fields, including anesthesia, spine surgery, plastic surgery, and bariatric surgery.¹⁰¹⁻¹⁰⁴ It can be easily speculated

Table 4. Top 10 Articles With Highest Citation Density Rank.

Density ranking	Citation rank	Title	Publication year
1	2	Human Papillomavirus and Survival of Patients With Oropharyngeal Cancer	2010
2	1	Radiotherapy Plus Cetuximab for Squamous-Cell Carcinoma of The Head And Neck	2006
3	18	The Mutational Landscape of Head And Neck Squamous Cell Carcinoma	2011
4	21	Human Papillomavirus And Rising Oropharyngeal Cancer Incidence In The United States	2011
5	31	The Molecular Biology of Head And Neck Cancer	2011
6	8	Case-Control Study of Human Papillomavirus and Oropharyngeal Cancer	2007
7	13	Improved Survival of Patients With Human Papillomavirus-Positive Head And Neck Squamous Cell Carcinoma In A Prospective Clinical Trial	2008
8	16	Meta-Analysis Of Chemotherapy In Head and Neck Cancer (Mach-Nc): An Update On 93 Randomised Trials and 17,346 Patients	2009
9	15	Platinum-Based Chemotherapy Plus Cetuximab In Head and Neck Cancer	2008
10	9	Identification of A Subpopulation of Cells With Cancer Stem Cell Properties In Head And Neck Squamous Cell Carcinoma	2007

that authors from the United States have a better chance of being cited than other authors. The United States has a strong influence on research in the health sciences; this can be attributed to greater financial opportunities for research and scientists in health sciences.

Moreover, Johns Hopkins University, the University of Michigan, and Duke University are the 3 leading institutions in the 100 most cited articles list; this correlates with the United States' leading position in the field.

Evaluation of the top 100 articles by decade shows considerable differences among decades with respect to citation numbers and citation density. In this study, the majority of the articles published were in the 1990s (n: 35) and 2000s (n: 56).

All of the 100 articles were published in 22 journals and nearly half of them (n: 48) were published in 1 of 3 journals: the *New England Journal of Medicine* (n: 19), the *Journal of Clinical Oncology* (n: 17), and *Cancer Research* (n: 12). High impact journals are attractive to authors for submission of their papers. Publishing in these journals ensures a larger number of citations, and this keeps the impact factor of these journals high. This situation is mentioned in other bibliometric studies and is known as Bradford's law.¹⁰⁵

Most of the papers in the top 100 articles are not site-specific (73%). Head and neck cancers have a similar histologic type and characteristics of disease. Besides that, researchers who address more than one tumor site have a better chance of being cited more often.

The most common topic was survival and prognosis. It was expected to dominate in an oncologic bibliographic study. Articles on treatment modalities concerning nonsurgical therapies like chemotherapy and radiotherapy had an obvious superiority over surgery related papers. Significant improvements have been made in radiotherapy and chemotherapy treatment of head and neck tumors in recent decades, which had an impact on publications.¹⁰⁶

We also looked at citation density, which could be related to how a paper is trending. Our list is not comprehensive for papers with the highest citation density, but the authors believe

that sharing citation density with the total citation count is more relevant for demonstrating the impact of papers in the list. The increase of average citation density by decade also shows the effect of advancements in internet access all around the world. Accessibility to the electronic format of articles gets easier all the time, so that circulation of these articles through the scientific community can reach unexpected levels.

It may appear surprising that the studies with the largest number of citations are recent studies; among other factors, this could be attributed to the appearance of scientific journals in electronic format, facilitating access and thus favoring circulation in the scientific community.

Being cited more is not always related to the quality of the paper, but it is a measure of the paper's impact and/or visibility in the field.¹⁰⁷ Besides a paper's contribution to current knowledge, there are other factors affecting the frequency a paper will be cited. Self-citation, traction of the topic, and the prestige of the publishing journal can be factors influencing the number of times papers are cited.¹⁰⁸ In the literature, it is argued that having a multidisciplinary team of authors increases the visibility of papers and thereby increases the chance of being presented more and being cited in the different disciplines.¹⁰⁹ Each instance of being cited increases the frequency of citations by increasing the visibility of the research.

Conclusion

To our knowledge, this study is the first to identify the 100 most cited papers in the literature on head and neck cancers. Our analysis provides a summary of the most influential studies on head and neck cancers and highlights areas of research that require further investigation and development.

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