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Fifty Years Research Output in Oral Submucous Fibrosis: A Bibliometric Analysis of Publications from 1967 to 2016

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ABSTRACT

Oral submucous fibrosis (OSMF) is a precancerous state which affects the oral cavity. The etiology of OSMF is due to various factors like chilies consumption, deficiency of nutrition, areca nut chewing habits, genetic susceptibility, altered salivary constituents, and autoimmunity and collagen disorders. The present study is undertaken to find out the publication trends on OSMF during 1967-2016. The study mainly focus on distribution of research output, national and international collaborations, top journals for publications, most prolific authors, authorship pattern, citations pattern and highly cited papers on OSMF. The results indicate that highest growth rate of publications occurred between the years 1997-2006. India's research share, citation score and h index was highest among all countries. Central South University, China topped the scene among all institutes. The maximum publications were two authored publications. CP Chiang of National Taiwan University and JJ Pindborg of University of Copenhagen were found to be the most prolific authors.

Keywords: Oral premalignant lesion; Oral submucous fibrosis; Oral premalignant condition; Submucous fibrosis; Bibliometrics; Research output.

1. INTRODUCTION

Oral submucous fibrosis (OSMF), a high risk precancerous condition, is known to be initially described in early 1950s and is characterised by "changes in the connective tissue fibers of the lamina propria and deeper parts leading to stiffness of the mucosa and restricted mouth opening seen predominantly in people of Asian descent."[1] There is stiffness of connective tissue fibres which leads to restricted mouth opening. It may be defined as a state of oral mucosa stiffness with diminished mouth opening or it is condition characterised by fibrotic changes in oral mucosa and decreased mouth opening.

Epidemological studies shows that beetle nut chewing is most common cause of OSMF. Other common causes are chilies, genetic susceptibilities, nutritional deficiencies and auto immunity. OSMF is caused by free radical production by areca nut. Free radical is a reactive oxyzen species which produce toxic effects in human body cells. This free radical are caused by scanvanged by antioxidants' present in human body but when there is excessive production of free radicals it damage lipid, nucleic acids and proteins of cells. When body's antioxidants system surpassed by free radicals then these free radical damage the cells and also leads to cells' death.[2]

OSMF affects an estimated 2.5 million people, mostly in the Indian Subcontinent.[3] It is most commonly found in Asian people especially in India, Bangladesh, Sri Lanka, Pakistan, Taiwan and China. There is 0.4 percent prevalence of OSMF reported in Indians.[4]

The present study is a bibliometric overview of OSMF research. Bibliometrics is the "quantitative treatment of the properties of recorded discourse and behavior appertaining to it."[5] It can be useful in identifying the research trends in a subject, authorship trends and research collaborations. Bibliometric studies have been conducted in the field of medicine on various topics like Down syndrome[6], Osteoporosis[7], Alzheimer[8], Anemia[9], Neurotoxicology[10], Tuberculosis[11], Malaria vaccine[12], Dengue[13], Male Breast Cancer[14], Japanese encephalitis[15], etc.

Some bibliometric studies have also been conducted on dental and oral health problems. Yang, Needleman & Niederman[16] conducted a bibliometric analysis of the pediatric dental literature in MEDLINE and found that substantial literature is available in pediatric dentistry on which clinical decisions can be based. Kramer *et al.*[17] undertook a 15-year bibliometric analysis of the journal Dental Traumatology in order to understand the traumatic dental injuries in the primary dentition. Pena-Cristobal[18] studied the 100 most cited articles on oral cancer using the Science Citation Index Expanded tool. Gondivkar et[19] al did a bibliometric analysis of 100 most cited articles on oral submucous fibrosis. Liu et al[20] conducted a bibliometric analysis of recent trends and characteristics of oral potentially malignant disorders (OPMD). Yeung, Wong, & Leung[21] analysed the citation received by coronectomy papers and found that the papers dealing with postoperative

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morbidity had high citation counts. Gondivkar *et. al.*[22] studied the top cited articles on ameloblastoma which is a prevalent odontogenic neoplasm.

2. OBJECTIVES OF THE STUDY

The prime objective of the study is to analyse the research productivity on Oral Submucous Fibrosis (OSMF) in the field of oral pathology. The specific objectives are as follows.

- To find out the type of documents containing OSMF research output
- To explore the distribution of global research output on OSMF
- To identify the top countries conducting research on OSMF
- To identify the top institutions conducting research on OSMF
- To identify the most prolific authors conducting research on OSMF
- To study the authorship pattern in OSMF research
- To study the top sources preferred by authors for publishing OSMF research
- To study the citation trend and top cited papers on OSMF.

3. METHODOLOGY

For the present study data was obtained from Scopus database[23] which is the world's largest abstract and citation database of peer-reviewed literature. Data of world publications on OSMF published from 1967-2016 was extracted from this database using different key words viz. "oral premalignant lesion", "oral submucous fibrosis", "oral premalignant condition" and "submucous fibrosis". These keywords were searched in the TITLE-ABS-KEY field of the database. After exporting data from Scopus database to excel sheet it was delimited in certain ways to analyse results and put it into tabular form. For authors, complete count was used, i.e., all the authors of the papers were considered instead of only the first author. Calculations and statistical techniques were applied in the excel sheet to draw specific results. Total Publications (TP), Total Citations (TC), Average Citations per Paper (ACPP) and h-index was calculated during analysis. ACPP is calculated by dividing the total citations received by the number of papers.

Table 1. Publication types

Type	TP	Percentage	TC	ACPP
Article	1207	83.18	23221	19.23
Review	133	9.17	5436	40.87
Letter	48	3.31	104	2.16
Conference Paper	28	1.93	594	21.21
Book Chapter	10	0.69	7	0.7
Editorial	9	0.62	25	2.77
Note	8	0.55	12	1.5
Short Survey	6	0.41	64	10.66
Conference Review	1	0.07	0	0
Erratum	1	0.07	0	0

TP= "Total Publications", TC= "Total Citations", ACPP= "Average Citations Per Paper".

Table 2. Distribution of papers during 1967-2016

Year	TP	Per cent of TP	CO	Per cent of Growth
1967-1971	28	1.29	-	-
1972-1976	20	1.37	48	-28.57
1977-1981	32	2.20	80	50.00
1982-1986	41	2.82	121	28.12
1987-1991	62	4.27	183	51.21
1992-1996	74	5.09	257	19.35
1997-2001	139	9.57	396	87.83
2002-2006	171	11.78	567	23.02
2007-2011	332	22.88	899	94.15
2012-2016	552	38.04	1451	66.26
Total	1451	100	-	-

TP= "Total Publications", CO= "Cumulative Output", Formula of Growth= "Final Value-Start Value/Start Value X100".

Table 3. Top contributing countries

Rank	Country	TP	Percentage Share of Total Output	TC	ACPP	h-index
1	India	636	43.83	9395	14.77	49
2	Taiwan	164	11.30	4838	29.50	39
3	United States	163	11.23	5803	35.60	42
4	United Kingdom	88	6.06	3806	43.25	35
5	China	69	4.76	828	12.00	15
6	Canada	37	2.55	1491	40.29	22
7	Japan	37	2.55	1572	42.48	21
8	Denmark	32	2.21	2247	70.21	24
9	Sri Lanka	28	1.93	919	32.82	15
10	Germany	27	1.86	920	34.07	14
11	Pakistan	24	1.65	560	23.33	10
12	France	22	1.52	855	38.86	15
13	Saudi Arabia	17	1.17	172	10.12	7

TP= "Total Publications", TC= "Total Citations", ACPP= "Average Citations Per Paper".

Table 4. Top institutions research output

Institution	Country	TP	TC	ACPP	h-index
Central South University China	China	60	415	6.91	10
National Taiwan University	Taiwan	53	1789	33.75	25
University of Texas MD Anderson Cancer Center	United States	43	2242	52.13	23
Kaohsiung Medical University	Taiwan	39	1352	34.66	21
Xiangya Hospital of Central-south University	China	39	193	4.94	8
National Taiwan University College of Medicine	Taiwan	34	1299	38.20	21
King's College London	United Kingdom	33	2533	76.75	25
National Taiwan University Hospital	Taiwan	32	839	26.21	18
University of Copenhagen, School of Dentistry	Denmark	31	1965	63.38	23
Chung Shan Medical University	Taiwan	30	727	24.23	17
Indian Institute of Technology, Kharagpur	India	27	252	9.33	10
Tata Memorial Hospital	India	27	904	33.48	15
University of Peradeniya	Sri Lanka	26	792	30.46	13
The University of British Columbia	Canada	24	1146	47.75	16
Tata Institute of Fundamental Research	India	24	2263	94.29	21
Chang Gung Memorial Hospital	Taiwan	24	573	23.87	14
Regional Cancer Centre India	India	23	994	43.22	16
Chung Shan Medical University Hospital	Taiwan	23	450	19.56	13
Ragas Dental College and Hospital	India	22	509	23.13	11
Taipei Medical University	Taiwan	21	485	23.09	12
Total	-	635 (43.76)	21722 (73.73)	34.21	-

TP= "Total Publications", TC= "Total Citations", ACPP= "Average Citations Per Paper".

The h-index[24] was suggested by Jorge H. Hirch in 2005. A scientist/ journal/ institution has index h if its h papers have atleast h citations each. Impact Factor (IF)[25] given by Clarivate Analytics and SCImago Journal Rank (SJR)[26] was noted for the top journals. To study collaboration pattern, Collaboration Coefficient (CC) using the methodology by Ajiferuke, Burrel & Tague (1988)[27] was calculated.

4. DATA ANALYSIS AND FINDINGS

4.1 Type of Publications

Different kind of publications in which research work on OSMF is contributed during last 50 years is listed in Table 1. Out of total publications 1207 (83.18 %) are research articles, 133 (9.17 %) are reviews, 48 (3.31 %) are letters, 28 (1.93 %) are conference papers, 10 (0.69 %) are book chapters, 9 (0.62 %) are editorial, 8 (0.55 %) are notes, 6 (0.41 %) are short survey, 1 (0.07 %) is conference review and 1 (0.07 %) is erratum. It is also apparent that in spite of more research output was produced in articles but ACPP of research output published as reviews was two times more (40.87) than articles (19.23). ACPP of conference papers was also a little bit more (21.21) than articles. Short surveys published on OSMF also received 10.66 ACCP. Other type of documents had ACPP less than 3. Thus, it was observed that reviews and conference papers received more citations than the articles.

4.2 Distribution of Research Publications

There has been a continuous increase in publications from the first decade (1967-76) to the latest decade (2007-16). During last 50 years, about 60 per centre research output on OSMF was contributed in decade fifth (2007-16). Table 2 shows the distribution of research output in ten blocks of five years each. It is very apparent that highest growth rate occurs in the block year 2007-11 (94.15 %) followed by 1997-2001 (87.83

%). More than one-third (38.04 %) research output on OSMF was contributed during 2012-16. In first block year it was very less (1.29 %) of total research output and afterwards increased continuously by every block year. Highest number of research was contributed near 21st century. The citations received during the block year 2007-11 accounts for 23.79 per cent of the total citations. The ACCP was also highest during the block year 1992-96 (40.93 %) followed by 1997-2001 (38.35).

4.3 Country-wise Research Share

The research on OSMF has been contributed by 63 countries. The research contribution of top countries (contributing more than 1 per cent research share) on OSMF is clearly reflected through table 3. India's research share (43.83 %) is little less than half of total research output. Next most contributing countries are Taiwan (11.30 %), United States (11.23 %) and United Kingdom (6.06 %). Indian output also accounted for highest citation count (9395 citations) followed by United States (5803 citations). The ACPP is highest (70.21) for the publications of Denmark followed by United Kingdom (43.25) and Japan (42.48). India among top ten producers of research publications on OSMF has highest h-index i.e. 49.

4.4 Institution-wise Research Share

The top 20 institutions that produced highest research outputs on OSMF during the period under study are listed in Table 4. These 20 institutions together contributed 43.76 per cent of total research output and received 73.73 per cent citations of total citation received during the period having an ACPP of 34.21. It is also observed that among twenty top Institutions which contributed highest research output on OSMF, Central South University, China took the lead by producing research output of 60 publications followed by National Taiwan University with 53 research publications. Ten institutions produced 30 or more than 30 research publications on OSMF. In terms of citations, Kings College, London received highest citations i.e. 2533 for 33 total research publications. It is also noticed that Tata Institute of Fundamental Research, India had highest ACPP (94.29) while the h-Index was highest and similar for two institutes namely King's College London

Table 5. Most prolific authors

Author	Affiliation	TP	TC	ACPP	h-index
Chiang, C.P.	National Taiwan University, Taipei, Taiwan	26	558	21.46	16
Pindborg, J.J.	University of Copenhagen, Denmark	26	1506	57.92	20
Paul, R.R.	Guru Nanak Institute of Dental Science and Research and Hospital, Kolkata, India	24	245	10.20	10
Warnakulasuriya, S.	King's College London, London, United Kingdom	24	1817	75.70	18
Hahn, L.J.	National Taiwan University Hospital, Taipei, Taiwan	23	1208	52.52	19
Zhang, L.	University of British Columbia, Vacouver, BC, Canada	23	1225	54.56	16
Gupta, P.C.	Tata Inst. of Fundamental Research, Mumbai, India	21	2270	108.09	20
Chatterjee, J.	Medical College Hospital, Kolkata, India	20	198	9.9	9
Lee, J.J.	National Taiwan University,Taiwan	20	1270	63.5	15
Rajendran, R.	Medical College, Trivandrum, India	20	279	13.95	9
Rosin, M.P.	BC Cancer Agency, Vancouver Canada	20	1049	52.45	14
Shieh, T.Y.	Kaohsiung Medical University, Taiwan	20	813	40.65	15
Chen, H.M.	National Taiwan University ,Taiwan	19	383	20.15	13
Lippman, S.M.	University of Texas, United States	19	1259	66.26	15
Jeng, J.H.	National Taiwan University College of Medicine, Taipei, Taiwan	18	957	53.16	14
Daftary, D.K.	Tata Institute of Fundamental Research, Bombay, India	17	1438	84.58	14
Kuo, M.Y.P.	National Taiwan University,Taiwan	17	551	32.41	14
Mehrotra, R.	Institute of Cytology and Preventive Oncology, Noida, India	17	350	20.58	12
Mehta, F.S.	Tata Inst. of Fundamental Research, Bombay , India	17	1418	83.41	14
Pal, M.	Guru Nanak Institute of Dental Science and Research, Kolkata, India	17	173	10.17	8

TP= "Total Publications", TC= "Total Citations", ACPP= "Average Citations Per Paper".

Table 6. Authorship pattern

Author(s)	Total Research Output (10 yearly)					Total Research Output	
	1967-1976	1977-1986	1987-1996	1997-2006	2007-2018	Total	Per cent
Single	0	4	2	13	107	126	8.68
Two author	8	7	22	45	148	230	15.86
Three	8	10	25	46	139	228	15.72
Four	8	11	25	55	127	226	15.58
Five	5	8	24	43	104	184	12.69
Six	9	21	16	44	92	182	12.55
Seven	0	4	9	21	64	98	6.75
Eight	4	2	4	14	39	63	4.31
Nine	2	3	3	15	16	39	2.69
Ten	0	2	1	7	15	25	1.73
More than 10	3	1	6	7	33	50	3.44
Total	47	73	137	310	884	1451	100
Per cent	3.24	5.03	9.44	21.36	60.93	100	-
CC	0.745	0.726	0.725	0.716	0.644	0.675	-

CC= "Collaboration Coefficient"

and National Taiwan University (25). Among these top 20 institutions, eight are from Taiwan, five from India and two from China indicating that these institutions of Asiatic region are frontrunners in research on OSMF.

4.5 Most Prolific Authors

The list of twenty top authors who produced highest contribution to research output on OSMF is given in Table 5. Out of these 20 authors, 6 authors are from National Taiwan University, Taiwan, 3 authors are from Tata Institute of Fundamental Research, Bombay, 2 authors from Guru Nanak Institute of Dental Science and Research and Hospital, Kolkata and one each from other institutions. It is also noticed that among these most productive authors 7 authors are from China, 8 are from India, 2 are from Canada and 1 each from USA, Denmark and United Kingdom.

In terms of number of publications, CP Chiang and JJ Pindborg are most productive authors with 26 publications each followed by Paul, R.R. and Warnakulasuriya, S (24 each). It is also noted that 12 out of 20 prolific authors contributed more than twenty research publications each while rest 8 authors contributed more than 17 publications each. The ACPP on research output contributed by Gupta PC (108.09) was recorded highest that was distantly followed by Daftary, DK (84.58). The h index is highest for Gupta, PC (20) and Pindborg, JJ (20) followed by Hahn, LJ (19) and Warnakulasuriya, S (18).

4.6 Authorship Pattern

Table 6 illustrates the overall and decade wise distribution of authorship trend. It is evident from the Table 6 that only 8.68 per cent publications were single authored publications while rest of 91.32 had two or more authors. The maximum number of publications were two authored publications (15.86 %) nearly followed by three authored publications (15.72 %), four authored (15.58), five authored (12.69 %) and six authored publications (12.55 %). Seven to ten authored publications accounted for 18.92 per cent while more than 10 authored publications accounted for 3.44 per cent only.

The Collaboration Coefficient (CC) is also indicated in Table 6. The overall CC was found to be 0.675 and it was highest during the decade 1967-76 (0.745).

4.7 Top Journals Preferred for Publication

The total number of 1451 publications on OSMF from 1967 to 2016 appeared in 473 different sources. The top 20 journals preferred for publications on OSMF are listed in Table 7 which accounted for 37.28 per cent of total research publications during the period under study. Among these top 20 journals, 6 each are published from United Kingdom and United States, 5 from India, 2 from China and 1 from Thailand. *Journal of Oral Pathology and Medicine* has published highest (122) publications on OSMF followed by Oral Oncology (72). Among the top listed journals, 6 are published by Elsevier and 3 each by Wiley and Medknow Publications. Rest eight journals have been published by individual publishers. The Impact Factor (IF-2017) and SCImago Journal Rank (SJR-2017) were also noted for the top journals. Among all 20 ranked journals *International Journal of Cancer* has highest Impact factor (7.36) while SJR was highest for *Cancer* (3.455).

4.8 Citation Profile and Highly Cited Papers

The citation profile of research output on OSMF during last 50 years is shown in Table 8 which indicates that 86.70 per cent publications were cited at least once while 13.30 per cent publications were not cited at all. Majority of publications (15.37 %) received 11 to 20 citations followed by 14.27 per cent publications receiving 6 to 10 citations. More than 100 citations were received by 49 (3.38 %) publications. The top highly cited papers among these are listed in Appendix 'I'. These top highly cited papers are appearing in different 12 journals. These 20 papers received 5060 citations with an average of 253 citations per paper. The paper by Warnakulasuriya, Johnson and Van Der Waal accounted for highest number of citations (542) and was published in *Journal of Oral Pathology and Medicine* during 2007.

5. CONCLUSIONS

The study explores the 50 years research output on OSMF at global level. It was found that a total number of 1451 papers on OSMF were published during 1967-2016 which received

Table 7. Top twenty journals for publications

Source of Publication	Publisher	Country	TP	IF (2017)	SJR (2017)
Journal of Oral Pathology and Medicine	Blackwell Publishing Ltd	United Kingdom	122	2.237	0.791
Oral Oncology	Elsevier Ltd	United Kingdom	72	4.636	1.912
Indian Journal of Dental Research	Medknow Publications	India	49	-	0.266
Journal of Oral and Maxillofacial Pathology	Medknow Publications	India	33	-	0.351
Journal of Clinical and Diagnostic Research	JCDR Research and Publications	India	28	-	0.352
Zhonghua Kou Qiang Yi Xue Za/ Zhi Zhonghua Kouqiang Yixue Zazhi/ Chinese Journal of Stomatology	Zhonghua Yixeuehui Zazhishe/Chinese Medical Association Publishing House	China	25	-	0.125
Oral Surgery Oral Medicine Oral Pathology and Oral Radiology	Elsevier	United States	23	1.718	0.72
Journal of Cancer Research And Therapeutics	Medknow Publications	India	19	-	0.4
Asian Pacific Journal of Cancer Prevention	Asian Pacific Organization for Cancer Prevention	Thailand	18	-	0.616
Oral Diseases	Wiley	United Kingdom	18	2.31	0.798
British Journal of Oral And Maxillofacial Surgery	Elsevier	United States	16	1.260	0.687
Cancer Prevention Research	American Association for Cancer Research.	United States	16	4.021	2.245
Hua Xi Kou Qiang Yi Xue Za Zhi/ Huaxi Kouqiang Yixue Zazhi/ West China Journal of Stomatology	Department of West China Journal of Stomatology	China	16	-	0.119
International Journal of Oral and Maxillofacial Surgery	Elsevier	United States	14	2.164	1.137
Indian Journal of Cancer	Wolters Kluwer	India	13	0.658	0.361
International Journal of Cancer	Wiley	United States	13	7.36	3.152
British Dental Journal	Nature	United Kingdom	12	1.274	0.463
Cancer	Wiley	United States	12	6.537	3.455
Archives of Oral Biology	Elsevier	United Kingdom	11	2.050	0.752
Journal of Oral And Maxillofacial Surgery	Elsevier (W.B. Saunders)	United Kingdom	11	1.779	0.967

TP= "Total Publications", IF= "Impact Factor", SJR = "SCImago Journal Rank".

24963 citations with ACPP of 20.30. Growth rate was highest (94.15 %) in the block year 2007-11. Among all countries, research share of India remained highest (43.83 %) while Central South University of China is the top contributing institution (60 publications). ACCP of Tata Institute of Fundamental Research was highest with 94.29 average citations per paper. Nearly 36.46 per cent of research on OSMF was published in 20 journals among which *Journal of Oral pathology and Medicine* produced highest research output on OSMF. C.P. Chiang of National Taiwan University and JJ Pindborg of University of Copenhagen were the front runners in terms of number of publications but in terms of citations and ACPP P.C. Gupta of Tata Institute of Fundamental Research, India remained at top. Only 8.68 per cent publications were single authored publications while rest of 91.32 had two or more authors. Among all type of publications, reviews and conference papers received more citations. The study depicts that research work on OSMF was very less in earlier years or decades but increased during the later decades. Major research output was produced near 21st century especially during the last decade.

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Table 8. Citations profile of research output on OSMF during 50 years

No. of Citations	TP	Percentage	TC	Percentage
Zero	193	13.30	0	0
1	126	8.68	126	0.43
2	88	6.06	176	60
3	90	6.20	270	0.92
4	76	5.24	304	1.03
5	43	2.96	215	0.73
6-10	207	14.27	1607	5.45
11-20	223	15.37	3297	11.19
21-30	124	8.55	3104	10.54
31-40	83	5.72	2926	9.93
41-50	60	4.14	2714	9.21
51-100	89	6.13	6182	20.98
>100	49	3.38	8542	28.99
Total	1451	100.00	29463	100

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His contribution to the study is towards Introduction, and references part of the paper.

Appendix 'I'

Table 9. Highly cited research publications on OSMF

Highly cited papers	IF of journal	Country of publication	Citations
Warnakulasuriya, S., N. W. Johnson, and I. Van der Waal. "Nomenclature and classification of potentially malignant disorders of the oral mucosa." *Journal of oral pathology & medicine* 36.10 (2007): 575-580.	2.237	UK	542
Mao, L., et al. "Frequent microsatellite alterations at chromosomes 9p21 and 3p14 in oral premalignant lesions and their value in cancer risk assessment." *Nature medicine* 2.6 (1996): 682.	30.641	UK	408
Van der Waal, I. "Potentially malignant disorders of the oral and oropharyngeal mucosa; terminology, classification and present concepts of management." *Oral oncology* 45.4-5 (2009): 317-323.	4.636	USA	367
Rosin, M. P., et al. "Use of allelic loss to predict malignant risk for low-grade oral epithelial dysplasia." *Clinical Cancer Research* 6.2 (2000): 357-362.	10.199	USA	317
Lee, J. J., et al. "Predicting cancer development in oral leukoplakia: ten years of translational research." *Clinical Cancer Research* 6.5 (2000): 1702-1710.	10.199	USA	310
Gupta, P. C., et al. "Incidence rates of oral cancer and natural history of oral precancerous lesions in a 10-year follow-up study of Indian villagers." *Community dentistry and oral epidemiology* 8.6 (1980): 287-333.	1.992	UK	307
Tilakaratne, W. M., et al. "Oral submucous fibrosis: review on aetiology and pathogenesis." *Oral oncology* 42.6 (2006): 561-568.	4.636	USA	286
Nair, Urmila, Helmut Bartsch, and Jagadeesan Nair. "Alert for an epidemic of oral cancer due to use of the betel quid substitutes gutkha and pan masala: a review of agents and causative mechanisms." *Mutagenesis* 19.4 (2004): 251-262.	2.892	UK	262
Jeng, J. H., M. C. Chang, and L. J. Hahn. "Role of areca nut in betel quid-associated chemical carcinogenesis: current awareness and future perspectives." *Oral oncology* 37.6 (2001): 477-492.	4.636	USA	259
Gupta, P. C., and C. S. Ray. "Smokeless tobacco and health in India and South Asia." *Respirology* 8.4 (2003): 419-431.	4.756	UK	242
Gupta, P. C., and C. S. Ray. "Epidemiology of betel quid usage." *Annals-Academy of medicine singapore* 33 (2004): 31-36.	1.127	Singapore	209
Holmstrup, P., et al. "Long-term treatment outcome of oral premalignant lesions." *Oral oncology* 42.5 (2006): 461-474.	4.636	USA	200
Murti, P. R., et al. "Malignant transformation rate in oral submucous fibrosis over a 17-year period." *Community dentistry and oral epidemiology* 13.6 (1985): 340-341.	1.992	UK	198
Sankaranarayanan, R. "Oral cancer in India: an epidemiologic and clinical review." *Oral surgery, oral medicine, oral pathology* 69.3 (1990): 325-330.	1.718	USA	182
Trivedy, C. R., G. Craig, and S. Warnakulasuriya. "The oral health consequences of chewing areca nut." *Addiction biology* 7.1 (2002): 115-125.	4.223	UK	166
Nylander, K., Erik Dabelsteen, and Peter A. Hall. "The p53 molecule and its prognostic role in squamous cell carcinomas of the head and neck." *Journal of Oral Pathology & Medicine: Review article* 29.9 (2000): 413-425.	2.237	UK	165
Karabulut, A., et al. "Observer variability in the histologic assessment of oral premalignant lesions." *Journal of oral pathology & medicine* 24.5 (1995): 198-200.	2.237	UK	165
Rajalalitha, P., and S. Vali. "Molecular pathogenesis of oral submucous fibrosis–a collagen metabolic disorder." *Journal of oral pathology & medicine* 34.6 (2005): 321-328.	2.237	UK	160
Lee, C. H., et al. "The precancer risk of betel quid chewing, tobacco use and alcohol consumption in oral leukoplakia and oral submucous fibrosis in southern Taiwan." *British journal of cancer* 88.3 (2003): 366.	5.416	UK	159
Murti, P. R., et al. "Etiology of oral submucous fibrosis with special reference to the role of areca nut chewing." *Journal of oral pathology & medicine* 24.4 (1995): 145-152.	2.237	UK	156