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# Authorship Pattern on Dentistry Research During 1999-2018: A Scientometric Profile

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## Abstract

In recent years there have been few Scientometric studies in Dentistry Research at the world perspective. The aim of this study is to elaborate the scientific production of original and review articles published in the dental journals for the study period 1999 to 2018, considering qualitative and quantitative measures from all over the countries. All the records were downloaded completely from the Web of Science (WoS) online database during the period of study. The total output was 15970 records from 1635 journals. The results show that the year 2018 was considered the most productive with 1411 (8.84%) publications. Among the authors, Lang NP has published the highest number of 89 articles. Findings of the analysis revealed that the single author was published 2342 papers and 13628 papers published by multiple authors. From the study it can be concluded, this paper may be considered as a baseline study for the scientometric information related to articles on Dentistry published in the Web of Science.

**Keywords:** Dentistry, Scientometric, Authorship Pattern and Degree of collaboration

## INTRODUCTION

Dentistry, also known as dental medicine is a branch of medicine that consists of the study, diagnosis, prevention, and treatment of diseases, disorders, and conditions of the oral cavity. Dentistry, somehow, has been practiced since ancient times. For example, there is evidence of small holes in the jaws around the roots of the tooth from the Egyptian skull 2900 to 2750 BC. It is believed that such holes were drilled to disperse the boils. Also, details of dental treatment appear on Egyptian scrolls dating back to 1500 BC (Hussain & Khan, 2016).

The science of modern dentistry was developed between 1659 and 1800. The French surgeon Pierre Fauchard is the "father of modern dentistry". He introduced the dental fillings as a treatment for dental cavities. He asserted that sugar derivate, like tartaric acid, was responsible for tooth decay and he suggested that tumors between tooth and gums may be present in the later stages of tooth decay.

‘The term Scientometrics is a field of the quantitative aspects of science as an information process. It is part of the sociology of science and it applies in determining science policy. It involves quantitative studies of scientific activities, publishing, and therefore to some extent overlaps with bibliometrics’ (Tague-sutcliffe, 1992).

Scientometric method is used at regular intervals practice for assessing research and exercise to determining funding allocation to Research Institute. The methods used for Scientometric measurement contexts measure from the authorship productivity of the individual authors, measuring Impact Factor, Keyword Analysis, overlap in database and increasingly Internet. The concept of this study is similar to citation analysis, where the general hypothesis is that used to separate articles with the number of times an article is cited those that are rarely citation have more of an impact on the academic community. In the same way as the author in-depth analysis of articles related to the authorship patterns, author's productivity, key word basics depth of subject area, country wise articles contribution, These are some of the important factors that can be used to differentiate a journal of greater importance to scholars. A secondary aim is to analyze the journals in ways that reflect them the importance of this journal for antimicrobial research and scientific microbiology, microbiology, clinical pharmacology and medicines.

## **RELATED STUDY**

They conducted a study on research output of library professional's competency on research publications during 1999 to 2018 (Singh, & Bhoopendra, 2019). The study examine various scientometric parameter such as authorship pattern, year wise distribution of publication, determine the annual growth rate and growth rate of publication, relative growth rate and doubling time of publication. They examined on authorship pattern in biodiversity literature based on the publication indexed. The data was downloaded from Web of Science during the period from 1989-2016. A total 154654 records were retrieved. They found of the research

among the author Gastone, KJ gets the first rank with 257 records. Analysis by year shows that the performance of the three author papers was better for almost all years except 2014 and 2015. They found that the degree of collaboration is an increasing and decreasing trend(**Ali & H, 2018**).He studies a scientometric study on the structure and process of scholarly communication in Dentistry(**Batcha, 2018**). He found for this study developed on the basis of various features of the Dentistry research, such as the growth rate of the literature, the relative growth rate, and the contribution made by the authors in this regard of Research productivity, authorship patterns and collaboration.He explored on nephrology research in India which was published by Indian scientists (**Velmurugan, 2017**).He found the result of the highest number of papers was published by double authors which was 203.The highest number (303) of papers was published by more than three authors.The study carried out on citation in journal of documentation (**Suradkar & Khaparde, 2012**).They analyzed the minimum numbers (276) of authors were cited for 4 times and maximum (3155) number of authors was cited for double. The study revealed that few authors had been cited more number of times.

## **OBJECTIVES OF THE STUDY**

The main objectives of the present study are:

- To examine the growth of Dentistry Research published during the period 1999 to 2018
- To identify the most prolific author in the field of Dentistry Research
- To examine the nature of authorship pattern in the Dentistry Research.
- To study the single: multi-authored papers and determine the degree of collaboration.
- To identify the year wise authorship pattern of Dentistry Research

## **METHODOLOGY**

This study was done based on the publication data retrieved from the Web of Science (WoS) database for the last twenty year's (1999 to 2018) in the study field of Dentistry Research.A total of 15,970 publications were published during the study period 1999–2018.The search was performed using the basic search in the name of the Dentistry with Web of Science Core data base and with all probabilities and bibliographical details retrieved were about 15,970

research papers. Detailed analysis of the year-by-year rates of publication was done using Excel (MS 2010).

## DATA ANALYSIS AND INTERPRETATION

**Table 1: Analysis of Year Wise Distribution f Dentistry Publications**

| <b>Year</b>  | <b>Articles</b> | <b>Percentage</b> | <b>Cumulative No. Of Articles</b> | <b>Cumulative Percentage</b> | <b>W1</b> | <b>W2</b> | <b>R(a) W2-W1</b> |
|--------------|-----------------|-------------------|-----------------------------------|------------------------------|-----------|-----------|-------------------|
| 1999         | 424             | 2.65              | 424                               | 0.32                         | 6.05      | 6.05      | 0.00              |
| 2000         | 500             | 3.13              | 924                               | 0.69                         | 6.21      | 6.83      | 0.61              |
| 2001         | 463             | 2.90              | 1387                              | 1.03                         | 6.14      | 7.23      | 1.10              |
| 2002         | 469             | 2.94              | 1856                              | 1.38                         | 6.15      | 7.53      | 1.38              |
| 2003         | 482             | 3.02              | 2338                              | 1.74                         | 6.18      | 7.76      | 1.58              |
| 2004         | 473             | 2.96              | 2811                              | 2.09                         | 6.16      | 7.94      | 1.78              |
| 2005         | 495             | 3.10              | 3306                              | 2.46                         | 6.20      | 8.10      | 1.90              |
| 2006         | 587             | 3.68              | 3893                              | 2.9                          | 6.38      | 8.27      | 1.89              |
| 2007         | 723             | 4.53              | 4616                              | 3.44                         | 6.58      | 8.44      | 1.85              |
| 2008         | 765             | 4.79              | 5381                              | 4                            | 6.64      | 8.59      | 1.95              |
| 2009         | 830             | 5.20              | 6211                              | 4.62                         | 6.72      | 8.73      | 2.01              |
| 2010         | 860             | 5.39              | 7071                              | 5.26                         | 6.76      | 8.86      | 2.11              |
| 2011         | 901             | 5.64              | 7972                              | 5.93                         | 6.80      | 8.98      | 2.18              |
| 2012         | 952             | 5.96              | 8924                              | 6.64                         | 6.86      | 9.10      | 2.24              |
| 2013         | 1224            | 7.66              | 10148                             | 7.55                         | 7.11      | 9.23      | 2.12              |
| 2014         | 991             | 6.21              | 11139                             | 8.29                         | 6.90      | 9.32      | 2.42              |
| 2015         | 1034            | 6.47              | 12173                             | 9.06                         | 6.94      | 9.41      | 2.47              |
| 2016         | 1091            | 6.83              | 13264                             | 9.87                         | 6.99      | 9.49      | 2.50              |
| 2017         | 1295            | 8.11              | 14559                             | 10.84                        | 7.17      | 9.59      | 2.42              |
| 2018         | 1411            | 8.84              | 15970                             | 11.89                        | 7.25      | 9.68      | 2.43              |
| <b>Total</b> | <b>15970</b>    | <b>100.00</b>     |                                   | <b>100</b>                   |           |           |                   |



**Figure 4.1 Year Wise Distribution**

Table 1 shows the year-wise distribution of publications of Dentistry Research at the Global level during the period 1999–2018. A total of 15970 publications were published in the field of study. The highest of publication has been noted in the year 2018. It is recorded with 1411 (8.84%) publications. The year 2018 is considered the most productive year in terms of publications and hence it is ranked first. The second highest number of publications is found in the year 2017. The total of publication calculated in this year is 1295 (8.11%). This year is ranked second. The next highest number of publication of 1224 (7.66%) is observed in the year 2013. Further the years 2016 and 2015 also record more than 1000 publications in the field of Dentistry. The other years are noted with less number of publications.

From the above table the inference got in the present study is that there is a productive increased in terms of publications noted from the year 2015 to 2018. Further it is observed that there is a gradual increase in terms of number of publications year by year from 1999 onwards.

It is clear the focus on Dentistry is improving and the dental scientists concentrate more on publishing research output year by year. Yet the scholarly get published more is numbers from 2013 onwards.

Also this Table reveals the Relative Growth Rate of research output in Dentistry at the Global level. It could be seen clearly that the Relative Growth Rates (RGR) for all sources of Dentistry research output have increased from 0.61 (2000) to 2.12 (2013). The study reveals the fact that the RGR started increasing from 0.61 to 2.43. The overall RGR in the present study calculated is 1.85.

**Table 2: Analysis of Prolific Authors in Global Dentistry Research**

| Sl. No. | Author                     | h-index | g-index | m-index | TC   | NP | PY   |
|---------|----------------------------|---------|---------|---------|------|----|------|
| 1       | Lang NP                    | 26      | 59      | 1.37    | 3705 | 89 | 2001 |
| 2       | Wang HI                    | 22      | 40      | 1.16    | 1629 | 53 | 2001 |
| 3       | Vallittu PK                | 20      | 34      | 0.95    | 1421 | 34 | 1999 |
| 4       | Matinlinna JP              | 19      | 37      | 1.19    | 1417 | 38 | 2004 |
| 5       | Jacobs R                   | 18      | 33      | 0.95    | 1139 | 34 | 2001 |
| 6       | Ozcan M                    | 17      | 34      | 0.94    | 1257 | 34 | 2002 |
| 7       | MjorIa                     | 17      | 30      | 0.81    | 914  | 30 | 1999 |
| 8       | Botticelli D               | 16      | 24      | 1.60    | 780  | 58 | 2010 |
| 9       | Lee JY                     | 16      | 29      | 1.07    | 852  | 36 | 2005 |
| 10      | Lynch CD                   | 15      | 25      | 0.83    | 735  | 45 | 2002 |
| 11      | Gilbert GH                 | 15      | 23      | 0.71    | 682  | 47 | 1999 |
| 12      | Divaris K                  | 15      | 22      | 1.15    | 508  | 28 | 2007 |
| 13      | Gordan VY                  | 14      | 24      | 0.70    | 665  | 37 | 2000 |
| 14      | Wilson NHF                 | 14      | 25      | 0.67    | 646  | 36 | 1999 |
| 15      | Hickel R                   | 13      | 27      | 0.87    | 732  | 30 | 2005 |
| 16      | Macentee MI                | 13      | 20      | 0.65    | 465  | 30 | 2000 |
| 17      | Kalenderian E              | 13      | 18      | 1.30    | 353  | 29 | 2010 |
| 18      | Gallagher JE               | 11      | 15      | 0.73    | 306  | 34 | 2005 |
| 19      | Schwendicke F              | 11      | 20      | 1.83    | 461  | 32 | 2014 |
| 20      | Casamassimo PS             | 9       | 21      | 0.45    | 458  | 29 | 2000 |
| 21      | Faggion CM                 | 8       | 12      | 0.62    | 196  | 30 | 2007 |
| 22      | Scully C                   | 7       | 15      | 0.35    | 249  | 37 | 2000 |
| 23      | Brignardello<br>Petersen R | 6       | 9       | 0.75    | 102  | 64 | 2012 |
| 24      | Tennant M                  | 6       | 10      | 0.30    | 142  | 32 | 2000 |
| 25      | Kokich V                   | 1       | 1       | 0.05    | 1    | 45 | 1999 |

### **NP- Number of Publication, PY- Publication Year**

Table 2 summarizes the top 25 prolific authors who contributed in the field of Dentistry Research during the study period 1999-2018 along with their h-index and g-index. While analyzing the data 65760 scientists have produced 15970 records. Which have been scattered over 1935 Journals. The Table shows the top 25 Prolific Authors based on Dentistry research output. Further the table also explains the total citation, number of publications, publication year with h-index, g-index, and m-index.

Among the top 25 prolific authors, Lang NP has published the highest number of publications such as 89 articles and that his name is the first. He has recorded h-index score 26 and g-index score 59. The second top prolific author is Brignardello Petersen R. He has published 64 articles with h-index score 6 and g-index score 9. The third rank goes to Botticelli Dhas published 58 articles with 16 h-index and 24 g-index.

The study also finds the top citation who has received for the articles published in Dentistry. The author of Lang NP has received 3705 citations for his 89 publications with m-index value of 1.37 followed by Wang HI who has received 1629 citations for his 53 publications. Vallittu PK has received 1421 citations for his 34 publications with m-Index value of 0.95 and Kokich V has received the lowest citations i.e. 1 and less brought at 45 publications with 0.05 m-Index.

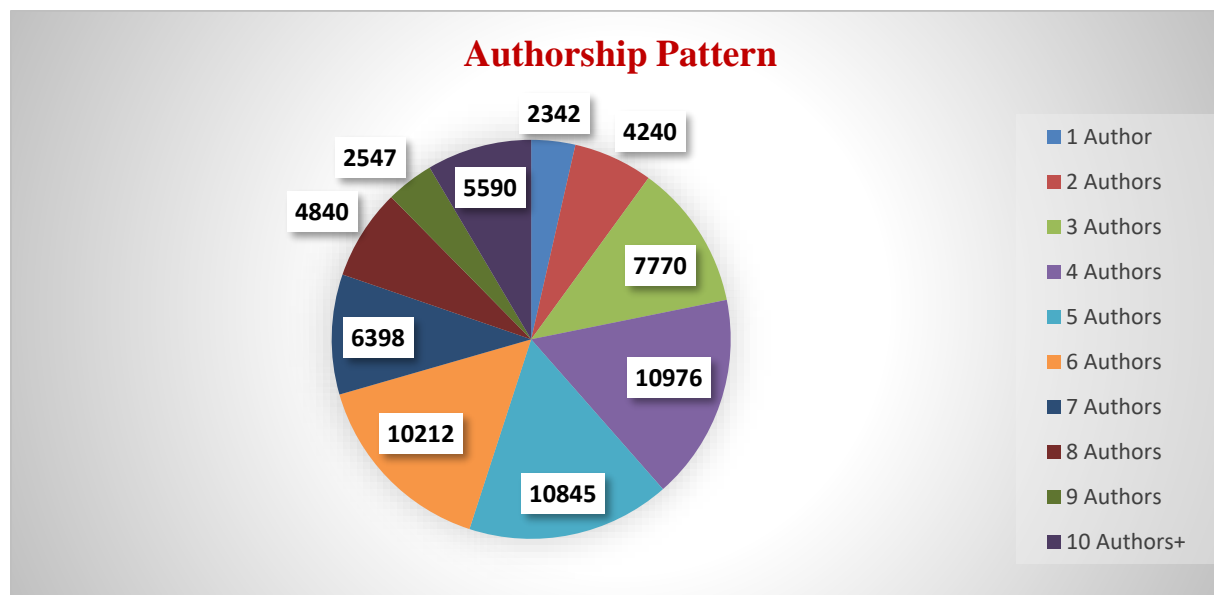
It could be found from the analysis that out of top twenty five prolific authors by number of publications the author Lang NP has highly published 89 research publications with h-index 26 and g-index 59, followed by Wang HI who has published 53 publications with h-index 22 and g-index 40 and Vallittu PK has published 34 records with h-index 20 and g-index 34. In the case of highly cited articles, of the author Lang NP has received citations of 3705, of 1629 citations been received by Wang HI and least by Kokich V of 1.

**Table 3: Analysis of Authorship Pattern in Global Dentistry Research**

| <b>Sl. No.</b> | <b>Authorship Pattern</b> | <b>Number of Authors</b> | <b>Percentage</b> |
|----------------|---------------------------|--------------------------|-------------------|
| 1              | 1 Author                  | 2342                     | 3.56              |
| 2              | 2 Authors                 | 4240                     | 6.45              |
| 3              | 3 Authors                 | 7770                     | 11.82             |



|              |              |       |        |
|--------------|--------------|-------|--------|
| 4            | 4 Authors    | 10976 | 16.69  |
| 5            | 5 Authors    | 10845 | 16.49  |
| 6            | 6 Authors    | 10212 | 15.53  |
| 7            | 7 Authors    | 6398  | 9.73   |
| 8            | 8 Authors    | 4840  | 7.36   |
| 9            | 9 Authors    | 2547  | 3.87   |
| 10           | 10 Authors + | 5590  | 8.50   |
| <b>Total</b> |              | 65760 | 100.00 |



**Figure 4.3 Authorship Pattern**

Table 3 highlights the authorship pattern in Dentistry Research from the period 1999 to 2018. It is seen that 65760 authors contributed 15970 articles. The Four Author contribution is noted to be the highest in number of publications. It is recorded to 10976 (16.69%) and occupies the first rank.

Records published by Five authors hold the second position which is calculated to 10845 (16.49%) articles. Further 10212 (15.53%) articles are published by Six Authors. They occupy the third position. Whereas the Single Author contribution is marked at the least position having only 2342 (3.56%) records. The study also shows that the number of publications by a Single Author and Nine Authors have no more margin. Documents published by Three, Seven and Ten+ Authors hold 4, 5 and 6 positions respectively with publication counts of 7770, 6398 and 5590 respectively. The inference of this table shows that a Single Author's percentage is the the

multiple author i.e. co-author's contribution is very high in Dentistry Research. So collaboration in publication is followed in Dentistry Literature.

**Table 4: Analysis of Year Wise Authorship Pattern in Global Dentistry Research**

| <b>Year</b>  | <b>One</b> | <b>Two</b> | <b>Three</b> | <b>Four</b> | <b>Five</b> | <b>Six</b> | <b>Seven</b> | <b>Eight</b> | <b>Nine</b> | <b>Ten+</b> | <b>Total</b> |
|--------------|------------|------------|--------------|-------------|-------------|------------|--------------|--------------|-------------|-------------|--------------|
| 1999         | 109        | 68         | 93           | 51          | 43          | 33         | 19           | 3            | 2           | 3           | 424          |
| 2000         | 126        | 91         | 118          | 89          | 54          | 15         | 6            | 4            | 1           | 2           | 500          |
| 2001         | 115        | 81         | 102          | 77          | 46          | 27         | 18           | 4            | 1           | 3           | 463          |
| 2002         | 111        | 71         | 121          | 61          | 63          | 24         | 21           | 7            | 3           | 5           | 469          |
| 2003         | 101        | 57         | 94           | 86          | 57          | 45         | 22           | 12           | 3           | 5           | 482          |
| 2004         | 95         | 61         | 102          | 76          | 74          | 37         | 19           | 7            | 6           | 11          | 473          |
| 2005         | 96         | 69         | 123          | 177         | 69          | 56         | 35           | 8            | 4           | 3           | 495          |
| 2006         | 91         | 57         | 134          | 125         | 123         | 67         | 27           | 9            | 10          | 13          | 587          |
| 2007         | 120        | 64         | 111          | 111         | 134         | 86         | 45           | 13           | 7           | 10          | 723          |
| 2008         | 125        | 123        | 123          | 95          | 121         | 121        | 19           | 19           | 7           | 22          | 765          |
| 2009         | 128        | 103        | 121          | 101         | 101         | 124        | 61           | 58           | 11          | 25          | 830          |
| 2010         | 75         | 112        | 97           | 102         | 125         | 111        | 45           | 44           | 13          | 9           | 860          |
| 2011         | 98         | 117        | 109          | 121         | 145         | 122        | 57           | 45           | 9           | 15          | 901          |
| 2012         | 114        | 96         | 127          | 173         | 112         | 123        | 43           | 33           | 25          | 46          | 952          |
| 2013         | 148        | 91         | 111          | 190         | 163         | 108        | 63           | 57           | 45          | 77          | 1224         |
| 2014         | 114        | 133        | 123          | 201         | 137         | 135        | 56           | 34           | 33          | 47          | 991          |
| 2015         | 108        | 147        | 175          | 221         | 123         | 115        | 76           | 47           | 34          | 57          | 1034         |
| 2016         | 117        | 165        | 177          | 209         | 137         | 123        | 83           | 57           | 22          | 34          | 1091         |
| 2017         | 148        | 189        | 195          | 221         | 165         | 109        | 96           | 67           | 25          | 49          | 1295         |
| 2018         | 203        | 225        | 234          | 257         | 177         | 121        | 103          | 77           | 22          | 65          | 1411         |
| <b>Total</b> | 2342       | 2120       | 2590         | 2744        | 2169        | 1702       | 914          | 605          | 283         | 501         | 15970        |

The analysis is made to find out which year the authorship pattern shows its highest impact. The Table 4 indicates that a total of 15970 were produced by different types authorship pattern during the study period.

Among those 2342 articles were from single author, 2120 articles were from two authors, 2590 articles were from three authored team and 2744 articles were contributed by four authored team. It could be identified from the inference that articles by four authored team is the highest and can be said as the most productive contributor. Whereas the scholarly articles shared by nine authors secure of less numbers and that they can be categorized as the least productive contributions. They published only 283 articles.

The analysis shows the author wise distribution of scholarly publications. 2018 is the most productive year in which single author contributed 203 articles only. The scholarly articles published by One Author are continuously increased from 2006 to 2009. The inference also shows that in the year 2012 and 2014. The article contribution is the same i.e. 114 records.

Out of twenty-year analysis, the scholarly articles by two author team are continuously increased from the year 2013 to 2018, which is calculated 91 articles in 2013 and 225 articles in 2018.

The articles shared by Three authors are continuously increasing from 2013 (111) to 2018 (234). The year 2001 and 2004 contributed same number of articles i.e. 102 articles. The year 2005 and 2008 also contributed 123 articles which is same for both.

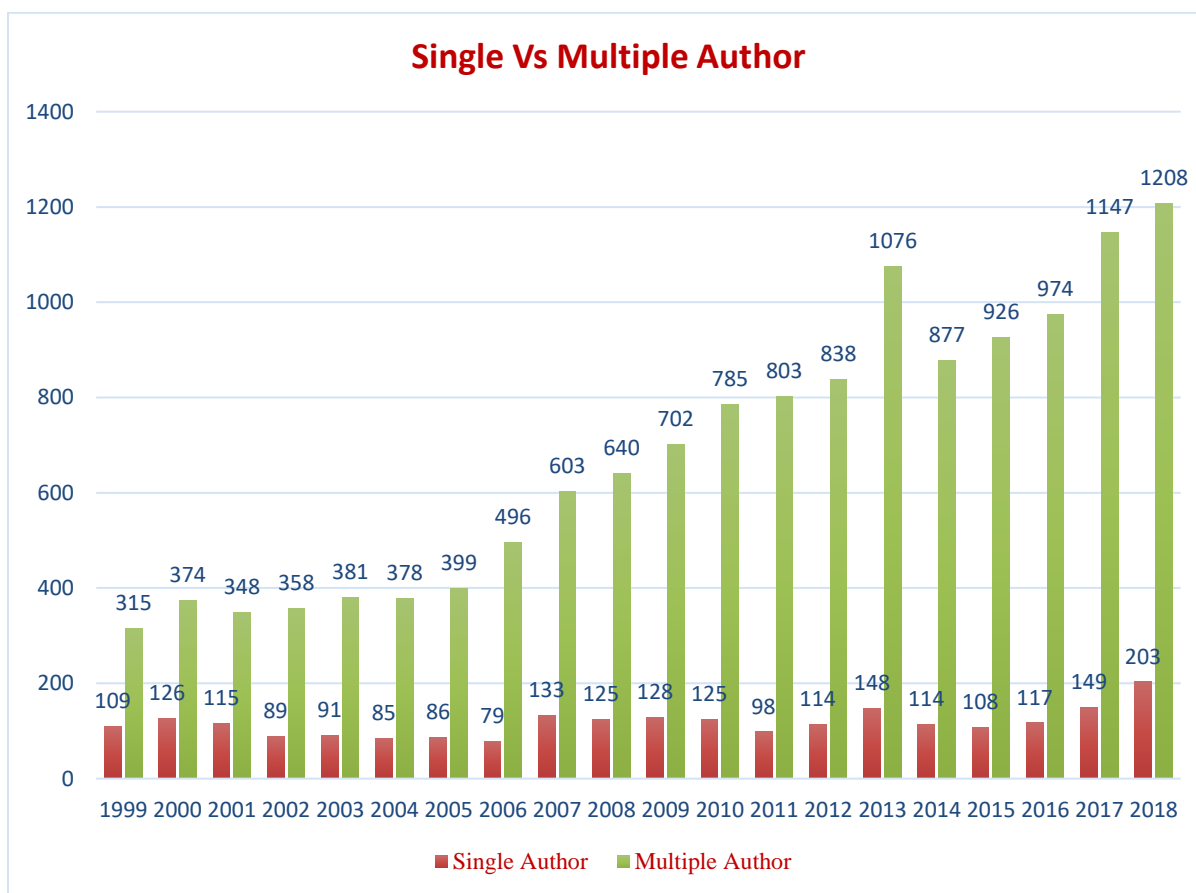
Based on the year wise distribution, 2018 produces 257 articles shared by Four authored team as the highest scholarly contributors. The years 2000 and 2001 are the least contribution was made by Nine authored team. The critical analysis of this Table also shows that 2018 is the most productive year with the team effort of One, Two, and Three... and Ten+ Authors.

It could be concluded from this analysis that the four authored team has recorded the highest productivity on Dentistry research during the sample period. According to year wise analysis that result has shown the year 2018 produces 257 articles shared by Four authored team as the highest scholarly contributors. Whereas the years 2000 and 2001 are the least contribution was made by Nine authored team.

**Table 5: Analysis of Single Vs Multiple Authors Output in Dentistry Research**

| Year | Single Author |      | Multiple Authors |      | Degree of Collaboration |
|------|---------------|------|------------------|------|-------------------------|
|      | Records       | %    | Records          | %    |                         |
| 1999 | 109           | 0.68 | 315              | 1.97 | 0.74                    |
| 2000 | 126           | 0.79 | 374              | 2.34 | 0.75                    |
| 2001 | 115           | 0.72 | 348              | 2.18 | 0.75                    |
| 2002 | 89            | 0.56 | 358              | 2.24 | 0.80                    |
| 2003 | 91            | 0.57 | 381              | 2.39 | 0.81                    |
| 2004 | 85            | 0.53 | 378              | 2.37 | 0.82                    |
| 2005 | 86            | 0.54 | 399              | 2.50 | 0.82                    |
| 2006 | 79            | 0.49 | 496              | 3.11 | 0.86                    |
| 2007 | 133           | 0.83 | 603              | 3.78 | 0.82                    |

|              |      |       |       |       |      |
|--------------|------|-------|-------|-------|------|
| 2008         | 125  | 0.78  | 640   | 4.01  | 0.84 |
| 2009         | 128  | 0.80  | 702   | 4.40  | 0.85 |
| 2010         | 125  | 0.78  | 785   | 4.92  | 0.86 |
| 2011         | 98   | 0.61  | 803   | 5.03  | 0.89 |
| 2012         | 114  | 0.71  | 838   | 5.25  | 0.88 |
| 2013         | 148  | 0.93  | 1076  | 6.74  | 0.88 |
| 2014         | 114  | 0.71  | 877   | 5.49  | 0.88 |
| 2015         | 108  | 0.68  | 926   | 5.80  | 0.90 |
| 2016         | 117  | 0.73  | 974   | 6.10  | 0.89 |
| 2017         | 149  | 0.93  | 1147  | 7.18  | 0.89 |
| 2018         | 203  | 1.27  | 1208  | 7.56  | 0.86 |
| <b>Total</b> | 2342 | 14.66 | 13628 | 85.34 |      |



**Figure4.4 Single Vs Multiple Author**

Table 5 unfolds the comparative study of a Single authors verses multi authors research output during the period 1999-2018. There were 2342 (14.66%) articles contributed by Single Authors. Whereas the remaining majority of the portion such as 13628 (85.34%) papers were

contributed by MultiAuthorship. It could be observed that the percentage of Single Authored paper is less than that of Multi Authored papers. The individual year wise analysis shows different picture in Table 4.9. But the collective collaborative publication shows an improved result. There is a trend of increase and decreased are observed in Single Author. The year 1999 and 2000 are marked as increasing trend. There is an up and down trend of scholarly records from the year 2001 to 2014. From the year 2015 to 2018, the scholarly records continuously increased i.e. 114 to 203.

The Multi-Authors research output study shows that the scholarly records continuously increased from 2001 (348) to 2013 (1076), except the year 2004 is marked as decreasing year. Again there is an increasing trend from the year 2014 (877) to 2018 (1208).

It is inferred from the table that the Degree of Collaboration at aggregate level in the beginning year 1999 is 0.74 and reached to 0.86 in 2018. It is identified that there is an increasing and decreasing trend in the degree of collaboration. From 1999 (0.74) to 2006 (0.86), the value is being increased. After 2006 the degree of collaboration value has been decreased from 0.86 (2006) to 0.82 (2007).

The findings of the study state that the Degree of Collaboration is high in the case of Dentistry literature.

**Degree of Collaboration (DC)**

The formula is  $C = \frac{N_m}{N_m + N_s}$

Where,

C = Degree of collaboration in a discipline

Nm = Number of multiple authored papers

Ns = Number of the single authored papers

**Table 6: Analysis of Block Year Wise Authorship Pattern in Dentistry Research**

| No. of Authors | 1999-2003 | 2004-2008 | 2009-2013 | 2014-2018 | Total |
|----------------|-----------|-----------|-----------|-----------|-------|
| Single Author  | 562       | 527       | 563       | 690       | 2342  |
| Two Authors    | 368       | 374       | 519       | 859       | 2120  |
| Three Authors  | 528       | 593       | 565       | 904       | 2590  |
| Four Authors   | 364       | 584       | 687       | 1109      | 2744  |

|               |      |      |      |      |       |
|---------------|------|------|------|------|-------|
| Five Authors  | 263  | 521  | 646  | 739  | 2169  |
| Six Authors   | 144  | 367  | 588  | 603  | 1702  |
| Seven Authors | 86   | 145  | 269  | 414  | 914   |
| Eight Authors | 30   | 56   | 237  | 282  | 605   |
| Nine Authors  | 10   | 34   | 103  | 136  | 283   |
| Ten+ Authors  | 18   | 59   | 172  | 252  | 501   |
| <b>Total</b>  | 2373 | 3260 | 4349 | 5988 | 15970 |

Table 6 reveals that the analysis authorship patterns for twenty years are grouped into four different blocks. The details of block year authorship are presented from the above Table. In the first block (1999–2003), Single author (562) has the highest number of papers contribution than other authors. In the second block (2004–2008), Three authors have the maximum number of contribution with 593 publications. In the third block (2003–2009), Four authors have collaborated 687 papers than other authors. In the fourth block (2010–2016), 1109 papers shared by Four authors than other authors. It is inference that maximum papers contributed by Four author.

## CONCLUSION

Very few studies on Dentistry Research have been conducted research output, especially from a scientometric standpoint with both qualitative as well as quantitative techniques. The present study provides useful information on Dentistry Research from 1999 to 2018 in the field of Dentistry Research. The data were collected from Web of Science. The goal of Scientometrics is providing quantitative characteristics of scientific activities. This study was includes authorship pattern, year wise authorship contribute, prolific author and degree of collaboration. It was measured that the maximum number of articles (8.84%) was published in 2013. The study reveals that the Author Lang NP with highest publication productivity of 89 and his h Index Value of 26. The articles of multi- authored (14.66%) is more than that of single-authored (85.34%) papers. The findings of the study state that the Degree of Collaboration is high in the field of Dentistry Research. The study reveals that 1109 articles contributed by Four authors than other blocks and it is inference that the maximum papers contributed by Four author. Further this study also identified to analyses coverage country wise distribution, journal wise, institutions wise and Geographical wise distribution of the literature.

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