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Literature of Aesthetic Plastic Surgery: A Bibliometric Study

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Abstract **- This paper contributes the literature examine inside the discipline of Aesthetic Plastic Surgery. The bibliographic database specifically MEDLINE which covered in the Pub Med had been used in this look at. The literature included for the duration i.e. from the year 2001 to 2020 became considered. A total of 15711 records of literature were observed in the field of Aesthetic Plastic Surgery. In the year 2020 was covered the maximum publication of records (11.7%) and the other years were showed that every year the records of Aesthetic Plastic Surgery were increased compared to the previous year's except the year 2018. A total of 10607 records were journal articles. A total of 15233 data were in English language forming 96.96% of the total followed by; Chinese (126 records), German (124 records), French (122 records), Turkish (17 records), Italian (15 records), etc. Only three journals are needed to supply one-third of the journal articles for zone-1. In the journal analysis "Aesthetic plastic surgery" contributed 2307 journal articles in the first position and followed by Plastic and reconstructive surgery (911) and The Journal of craniofacial surgery (698) in the second and third position respectively. The United States covered 14 core journals out of 29 core journals. 32.03% of citations listed with the term 'Aesthetic Plastic Surgery' in the MEDLINE database for the period of this study have more than five authors. A total of 90.5% of papers are written by means of multi-authors and the average degree of collaboration is arrived at 0.91.**
Keywords: **Bibliometrics, Aesthetic Plastic Surgery, Bradford's Law of Scattering, Degrees of Collaboration**

I. INTRODUCTION

Bibliometric study is the quantification of written assertion, which allows, in the calculation of the published knowledge. Bibliometrics observe the boom of literature, inter-relationship among different divisions of knowledge, output, authorship arrangement, and degree of collaboration, pattern of collection building, and their use. Gradually Scientometrics/bibliometric studies are reaching the position of inter-disciplinary in nature [1]. In this paper a try has been made to become aware of the core journals and authorship pattern of literature within the field of Aesthetic Plastic Surgery which concealed in MEDLINE database covered in PubMed.

II. AESTHETIC PLASTIC SURGERY

Aesthetic plastic surgery also called cosmetic surgery refers to procedures that improve the appearance of the face and body [2]. There is huge number of research publications in this field present days. So it leads to study the bibliometric analysis on Aesthetic Plastic Surgery.

III. LITERATURE REVIEW

Number of studies on mapping has scrutinized allied health journal citations to decide lists of essential journals in their fields; Steven [3] studied the mapping the literature of cytotechnology, Hook and Wagner [4] mapped the literature of dental assisting. Walcott [5] study turned into to map the literature of diagnostic medical sonography, Haaland [6] studied the literature of dental hygiene. Slater [7] examined the literature of speech-language pathology, Wakiji [8] analysed the literature of physical therapy, Hall [9] examined the literature of perfusion and identified the core journals, Delwiche [10] analyzed the literature of clinical laboratory science and important journals were identified, Schloman [11] studied the mapping the literature of allied health and identified the core journals. Ramakrishnan and Thavamani [12] studied on Leptospirosis.

A huge number of publications have been published in the area of authorship patterns in the bibliometric analysis. Maheswarappa and Nagappa [13] study was the Dynamics of scientific communications and the contributions analysis in Phytomorphology. Farahat [14] investigated the authorship patterns in agriculture sciences in Egypt. Karisiddappa, Gupta, and Kumar [15] study was the scientific productivity of authors in theoretical population genetics. Shirabe and Tomizawa [16] examined the likelihood of overseas access to international co-authorships. Ramakrishnan, Ravisankar, and Thavamani also considered the authorship pattern and collaborative research in the field of Pediatric Vascular Surgery [17] and Swine Flu Diseases [18].

The review of literature on bibliometrics articles showed that so far no quantitative study on "Aesthetic Plastic Surgery" was conducted. Hence the present study.

IV. OBJECTIVES OF THE STUDY

The objectives of this study are

1. To become aware of the boom of literature on "Aesthetic Plastic Surgery".

2. To observe the publication types covered by literature on Aesthetic Plastic Surgery.
3. To scrutinize the languages covered by way of literature on Aesthetic Plastic Surgery.
4. To categorise the core journals inside the field of literature on Aesthetic Plastic Surgery.
5. To find the country-wise coverage of journals in Aesthetic Plastic Surgery; and
6. To categorize the authorship pattern and degree of collaborative research in literature on Aesthetic Plastic Surgery.

V. METHODOLOGY

The contributions in the area of Aesthetic Plastic Surgery published in the course of the years i.e. 2001-2020 which might be concealed within the MEDLINE database covered in PubMed were searched and the information have been collected. The keyword "Aesthetic Plastic Surgery" was utilized to collect the details. The retrieved information have been analyzed the usage of SPSS. Titles of journals which covered journal articles mentioned have been ranked by using the frequency with which they were referred to. To be able to determine the core journals Bradford's law 19 of scattering has been used to get the core journals inside the discipline of Aesthetic Plastic Surgery. The data was analyzed in terms of authorship pattern and measured the degree of collaboration among the authors in the field of Aesthetic Plastic Surgery. To determine the degree of collaboration in quantitative terms, the formula suggested by K. Subramanyam20 has been used.

VI. ANALYSIS AND DISCUSSION

A. Records in the Literature on Aesthetic Plastic Surgery

Table I gives the information in regards to the quantum of records on Aesthetic Plastic Surgery. A complete of 15711 records has been determined for the field of Aesthetic Plastic Surgery in MEDLINE data which included in Pub Med for the period 2001-2010. In the year 2020 the publication of records is high i.e. 11.7% and the other years were showed that every year the records of Aesthetic Plastic Surgery were increased compared to the previous years except the year 2018 where the records were less compared to the previous year. The increase in publication output may be due to more research work in Aesthetic Plastic Surgery at global level.

TABLE I RECORDS IN THE LITERATURE OF AESTHETIC PLASTIC SURGERY

S. No.	Year	No. of Records	%	Cumulative %
1	2001	209	1.3	1.3
2	2002	249	1.6	2.9
3	2003	250	1.6	4.5
4	2004	259	1.6	6.2
5	2005	276	1.8	7.9
6	2006	416	2.6	10.6
7	2007	436	2.8	13.3
8	2008	540	3.4	16.8
9	2009	563	3.6	20.4
10	2010	616	3.9	24.3
11	2011	646	4.1	28.4
12	2012	800	5.1	33.5
13	2013	884	5.6	39.1
14	2014	986	6.3	45.4
15	2015	1144	7.3	52.7
16	2016	1280	8.1	60.8
17	2017	1493	9.5	70.3
18	2018	1334	8.5	78.8
19	2019	1488	9.5	88.3
20	2020	1842	11.7	100
	Total	15711	100	

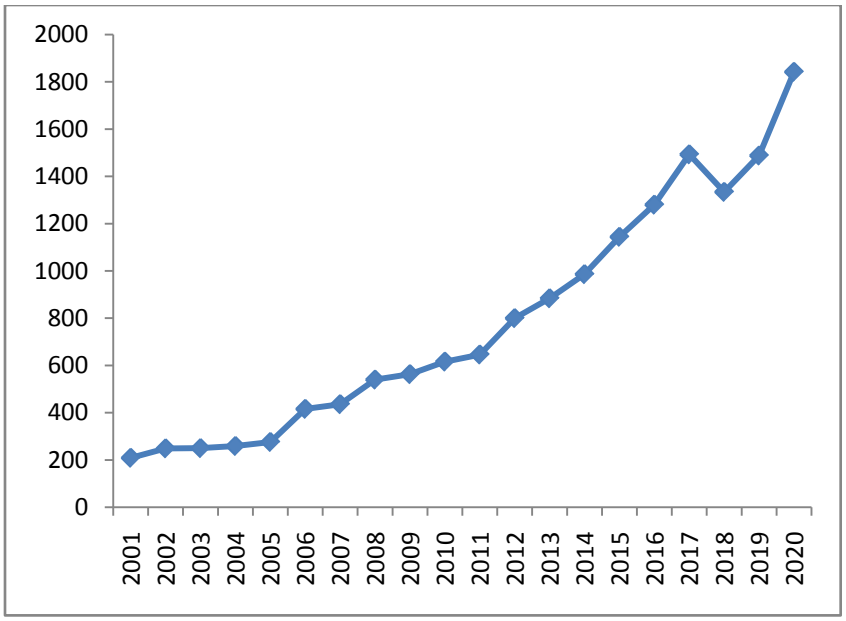

Fig. 1 Records in the Literature of Aesthetic Plastic Surgery

B. Publication Types in the Literature of Aesthetic Plastic Surgery

Table II indicates that a total of 10607 records were journal articles followed by:Review1443 records, Letter 1093 records, Research Support, Non-U.S. Govt 1037 records, Case Reports 369 records, Randomized Controlled Trial 223 records, Systematic Review 215 records, Editorial 167 records, Video-Audio Media 141 records, Multi-center Study 94 records, Observational Study 73 records, Published Erratum 47 records, Validation Study 39 records, Research Support, U.S. Govt, Non-P.H.S. 30 records, Portrait 21 records, Practice Guideline19 records, Research Support, N.I.H., Extramural 18 records, Meta-Analysis 17 records, Introductory Journal Article 12 records, Retracted Publication 12 records and other publication types were 34 records covered in the MEDLINE data which included in Pub Med.

TABLE II DISTRIBUTION OF PUBLICATION TYPES IN THE LITERATURE OF AESTHETIC PLASTIC SURGERY

Sl. No.	Publication Type	No. of Records	%	Cumulative %
1	Journal Article	10607	67.51	67.51
2	Review	1443	9.18	76.70
3	Letter	1093	6.96	83.65
4	Research Support, Non-U.S. Govt	1037	6.60	90.26
5	Case Reports	369	2.35	92.60
6	Randomized Controlled Trial	223	1.42	94.02
7	Systematic Review	215	1.37	95.39
8	Editorial	167	1.06	96.45
9	Video-Audio Media	141	0.90	97.35
10	Multi-center Study	94	0.60	97.95
11	Observational Study	73	0.46	98.42
12	Published Erratum	47	0.30	98.71
13	Validation Study	39	0.25	98.96
14	Research Support, U.S. Govt, Non-P.H.S.	30	0.19	99.15
15	Portrait	21	0.13	99.29
16	Practice Guideline	19	0.12	99.41
17	Research Support, N.I.H., Extramural	18	0.11	99.52
18	Meta-Analysis	17	0.11	99.63
19	Introductory Journal Article	12	0.08	99.71

20	Retracted Publication	12	0.08	99.78
21	Retraction of Publication	7	0.04	99.83
22	Technical Report	7	0.04	99.87
23	Historical Article	6	0.04	99.91
24	Research Support, U.S. Govt, P.H.S.	5	0.03	99.94
25	Congress	3	0.02	99.96
26	Interview	1	0.01	99.97
27	Lecture	1	0.01	99.97
28	Overall	1	0.01	99.98
29	Randomized Controlled Trial Veterinary	1	0.01	99.99
30	Twin Study	1	0.01	99.99
31	Webcast	1	0.01	100.00
Total		15711	100.00	

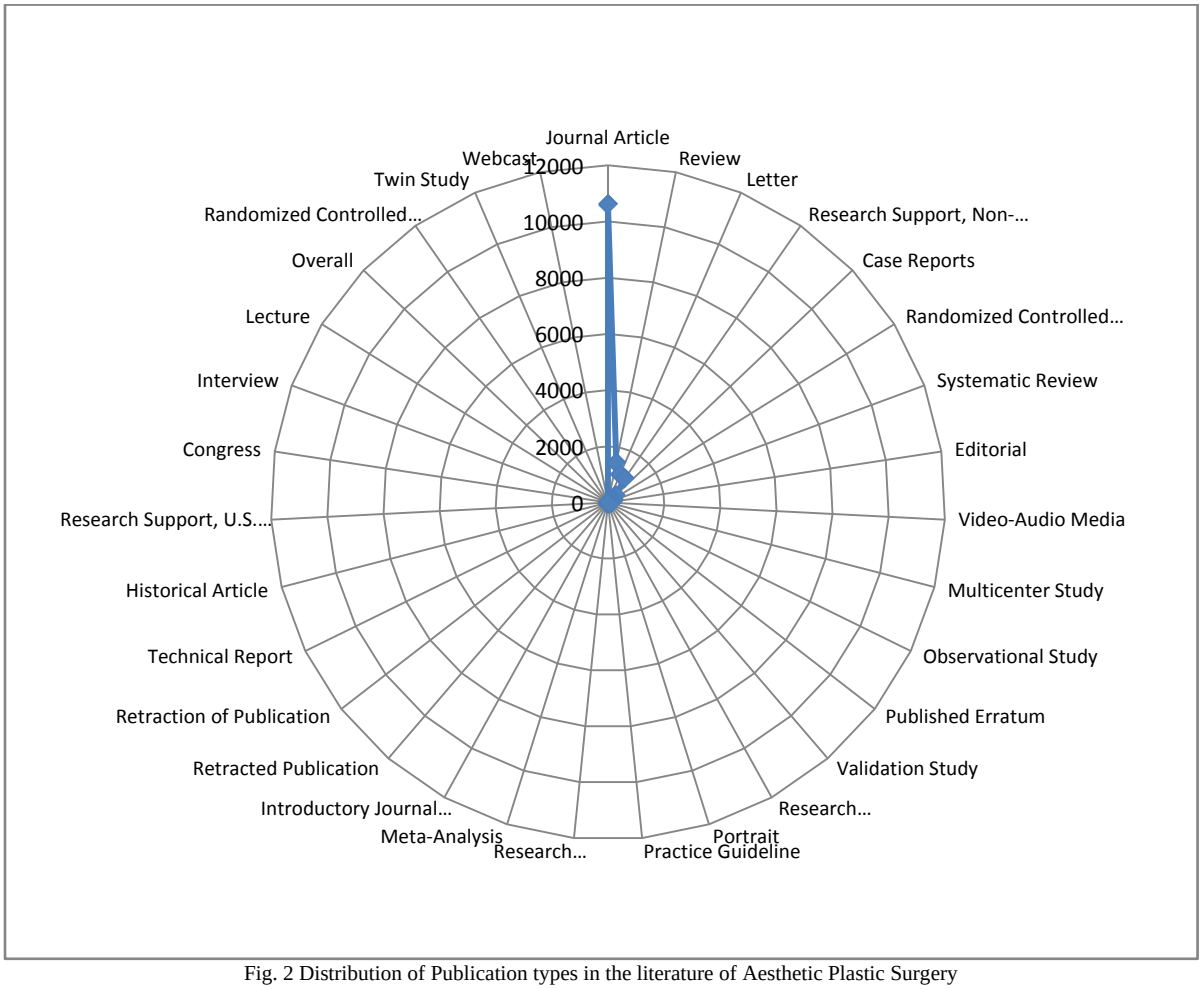

Fig. 2 Distribution of Publication types in the literature of Aesthetic Plastic Surgery

C. Languages in the Literature of Aesthetic Plastic Surgery

Table III shows the distribution of citations according to language in the course of the take a look at duration i.e. from the year 2001 to 2020. As the table shows that out of a total of 15711 records, 15233 of them were in English language forming 96.96% of the total followed by Chinese(126 records), German (124 records), French (122 records), Turkish (17 records), Italian (15 records),Hebrew (13 records), Russian (13 records), Portuguese (10 records), Polish (8 records), Hungarian (6 records), Japanese (6 records), Spanish (6 records), Dutch (4 records), Bulgarian (2 records), Czech (1 record), Croatian (1 record), Lithuanian (1 record), Rumanian (1 record), Slovak (1 record), and Swedish (1 record). (Fig. 3)

TABLE III DISTRIBUTION OF LANGUAGES IN THE LITERATURE OF AESTHETIC PLASTIC SURGERY

Sl. No.	Language	No. of Records	%
1	English	15233	96.96
2	Chinese	126	0.80
3	German	124	0.79
4	French	122	0.78
5	Turkish	17	0.11
6	Italian	15	0.10
7	Hebrew	13	0.08
8	Russian	13	0.08
9	Portuguese	10	0.06
10	Polish	8	0.05
11	Hungarian	6	0.04
12	Japanese	6	0.04
13	Spanish	6	0.04
14	Dutch	4	0.03
15	Bulgarian	2	0.01
16	Czech	1	0.01
17	Croatian	1	0.01
18	Lithuanian	1	0.01
19	Rumanian	1	0.01
20	Slovak	1	0.01
21	Swedish	1	0.01
Total		15711	100.00

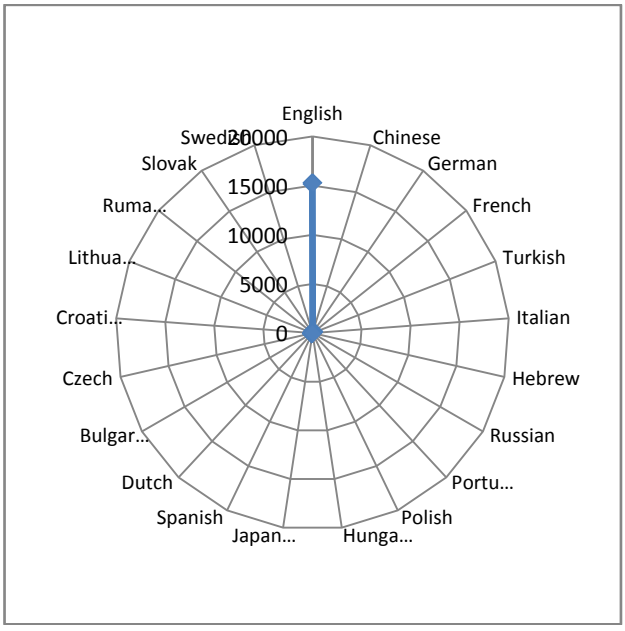

Fig. 3 Distribution of Languages in the literature of Aesthetic Plastic Surgery

D. Distribution by Zone of Cited Journals and Journal Articles in Aesthetic Plastic Surgery

As proven in table IV that there are 10607 journal articles selected for this study. The application of Bradford's Law of Scattering reveals the dispersion of the Aesthetic Plastic Surgery in Journals in MEDLINE database. Only three journals are needed to supply one-third of the journal articles for zone 1.

However, twenty six journals are required to produce the second grouping of journal articles in Zone 2, and nine hundred and forty eight journals to yield the journal articles that constitute Zone 3. Therefore, 2.97% of the journals produce two-thirds of the journal articles. These twenty nine journals are identified as core journals in the discipline of Aesthetic Plastic Surgery.

TABLE IV DISTRIBUTION BY ZONES IN AESTHETIC PLASTIC SURGERY

Zone	Journals		Journal Articles		Cumulative Total
	No.	(%)	No.	(%)	
Zone 1	3	0.31	3916	36.92	3916
Zone 2	26	2.66	3545	33.42	7461
Zone 3	948	97.03	3146	29.66	10607
Total	977	100.00	10607	100.00	

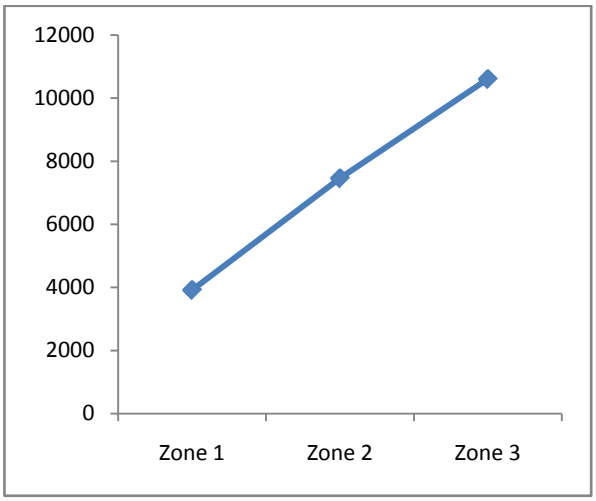

Fig. 4 Distribution by Zone of journal articles in Aesthetic Plastic Surgery

E. Core Journals on Aesthetic Plastic Surgery Literature

The data in table V truly shows that Aesthetic plastic surgery contributed 2307 journal articles in the first position and followed by Plastic and reconstructive surgery (911 journal articles) and The Journal of craniofacial surgery (698 journal articles) in the second and third position respectively. Those three journals produced first one third of journal articles and placed in the Zone-1.

TABLE V CORE JOURNALS ON AESTHETIC PLASTIC SURGERY

Sl. No.	Name of Journals	No. of Journal articles	Country of Publications
1	Aesthetic Plastic Surgery	2307	United States
2	Plastic and Reconstructive Surgery	911	United States
3	The Journal of Craniofacial Surgery	698	United States
4	Annals of Plastic Surgery	528	United States
5	Journal of Plastic, Reconstructive & Aesthetic Surgery: JPRAS	479	Netherlands
6	Aesthetic Surgery Journal	477	England
7	Plastic and Reconstructive Surgery. Global Open	275	United States
8	Archives of Plastic Surgery	198	Korea
9	Facial Plastic Surgery : FPS	152	United States
10	Microsurgery	149	United States
11	Journal of Reconstructive Microsurgery	125	United States
12	Journal of Plastic Surgery and Hand Surgery	109	Sweden
13	Indian Journal of Plastic Surgery	101	India
14	Burns	98	Netherlands
15	Annales De Chirurgie Plastique Et Esthetique	95	France
16	Dermatologic Surgery	80	United States
17	Journal of Cranio	77	Scotland
18	International Wound Journal	71	England
19	Ulusal Travma Ve Acil Cerrahi Dergisi = Turkish Journal of Trauma & Emergency	64	Turkey
20	Journal of Cosmetic Dermatology	60	England
21	Seminars in Plastic Surgery	54	United States
22	World Journal of Plastic Surgery	50	Iran
23	Archives of Facial Plastic Surgery	49	United States
24	Eplasty	45	United States
25	Annals of Burns and Fire Disasters	44	Italy
26	Scandinavian Journal of Plastic and Reconstructive Surgery and Hand Surgery	42	England
27	Clinics in Plastic Surgery	41	United States
28	JAMA Facial Plastic Surgery	41	United States
29	Zhonghua Zheng Xing Wai Ke Za Zhi = Zhonghua Zhengxing Waike Zazhi = Chinese Journal	41	China

F. Distribution of Journals by Country in the Combined of First & Second Zones in the Field of Aesthetic Plastic Surgery

The journals by country of publication in zone-1 and zone-2 combined were provided inside the Tables VI. The journals are presented in zone-1 and zone-2 combined has been identified as core journals within the discipline of Aesthetic Plastic Surgery. It has been presented that the United States covered 14 core journals out of 29 core journals.

This is followed by; England (4 core journals), Netherlands (2 core journals), China (1 core journal), France (1 core journal), India (1 core journal), Iran (1 core journal), Italy (1 core journal), Korea (1 core journal), Scotland (1 core journal), Sweden (1 core journal), and Turkey (1 core journal). (Figure 6).

It has been showing that the above countries are the fundamental publishers of literature in the field of Aesthetic Plastic Surgery. The study may be assumed as the research in the field of Aesthetic Plastic Surgery may be concentrated in these countries. It may be the MEDLINE database has included greater journals published from those nations within the discipline of Aesthetic Plastic Surgery.

TABLE VI DISTRIBUTION OF JOURNALS BY COUNTRY IN THE CORE JOURNALSIN THE FIELD OF AESTHETIC PLASTIC SURGERY

Sl. No.	Country of origin	Total No. of Journals	%	Cumulative %
1	United States	14	48.28	48.28
2	England	4	13.79	62.07
3	Netherlands	2	6.90	68.97
4	China	1	3.45	72.41
5	France	1	3.45	75.86
6	India	1	3.45	79.31
7	Iran	1	3.45	82.76
8	Italy	1	3.45	86.21
9	Korea	1	3.45	89.66
10	Scotland	1	3.45	93.10
11	Sweden	1	3.45	96.55
12	Turkey	1	3.45	100.00
Total		29	100.00	

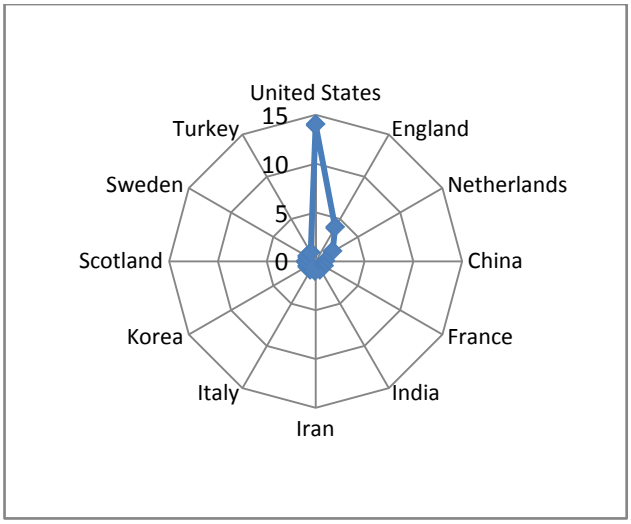

Fig. 5 Distribution of Journals by country in zone-1 and zone-2 combined

G. Authorship Pattern of Literature on Aesthetic Plastic Surgery

As proven in table VII, there are 15711 records in the subject of Aesthetic Plastic Surgery. 32.03% records in the MEDLINE database for the period of this study have more than five authors. The other records are four authors (15.73%), three authors (14.79%), five authors (14.54%), two authors (13.41%), and single author (9.39%) respectively. Hence, it infers in the field of Aesthetic Plastic Surgery, collaborative research is dominating than solo research. However it shows that there are 17 records (0.11%) without author references and they are anonymous authorship (Figure 6).

TABLE VII AUTHORSHIP PATTERN OF LITERATURE ON AESTHETIC PLASTIC SURGERY

Sl. No.	No. of Authors	No. of Records	%	Cumulative %
1	Single author	1476	9.39	9.39
2	Two authors	2107	13.41	22.81
3	Three authors	2323	14.79	37.59
4	Four authors	2472	15.73	53.33
5	Five authors	2284	14.54	67.86
6	Five and above authors	5032	32.03	99.89
7	Anonymous	17	0.11	100.00
	Total	15711	100.00	

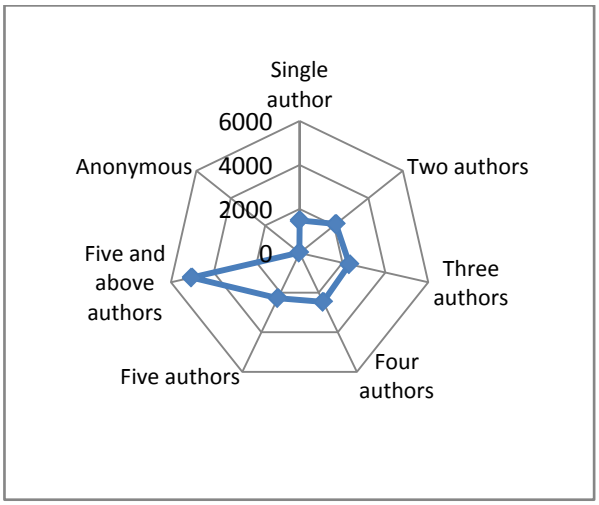

Fig. 6 Authorship Pattern of literature on Aesthetic Plastic Surgery

H. Single vs Multiple Authored Output of Literature on Aesthetic Plastic Surgery

Table VIII shows the authorship pattern of research output of Aesthetic Plastic Surgery literature. The multi-authors' papers occupied the fundamental percentage in this study. A total of 90.5% of papers are written by multi-authors. The ratio represents that the single and multi-authors' papers is 1:9 in the field of Aesthetic Plastic Surgery.

It was understood from the table that meager percent i.e. 0.11% of records represent anonymous authorship. The excessive charge of contributions via multi-authors' papers is the phenomenon of clinical research which is also proved by using quantity of authors in their distinct research, Figure 7.

TABLE VIII SHOWING SINGLE VS MULTIPLE AUTHORED OUTPUT

Sl. No.	Year	Single Author		Multiple Author		
		No. of Output	Percentage	No. of Output	Percentage	
1	2001	47	3.18	162	1.14	209
2	2002	55	3.73	194	1.36	249
3	2003	58	3.93	191	1.34	249
4	2004	38	2.57	221	1.55	259
5	2005	40	2.71	236	1.66	276
6	2006	44	2.98	371	2.61	415
7	2007	69	4.67	367	2.58	436
8	2008	83	5.62	457	3.21	540
9	2009	74	5.01	485	3.41	559
10	2010	90	6.10	525	3.69	615
11	2011	70	4.74	573	4.03	643
12	2012	67	4.54	731	5.14	798
13	2013	77	5.22	807	5.68	884
14	2014	82	5.56	903	6.35	985
15	2015	69	4.67	1075	7.56	1144
16	2016	70	4.74	1209	8.50	1279
17	2017	91	6.17	1401	9.85	1492
18	2018	88	5.96	1245	8.76	1333
19	2019	99	6.71	1388	9.76	1487
20	2020	165	11.18	1677	11.79	1842
Anonymous						17
Total		1476	100.00	14218	100.00	15711

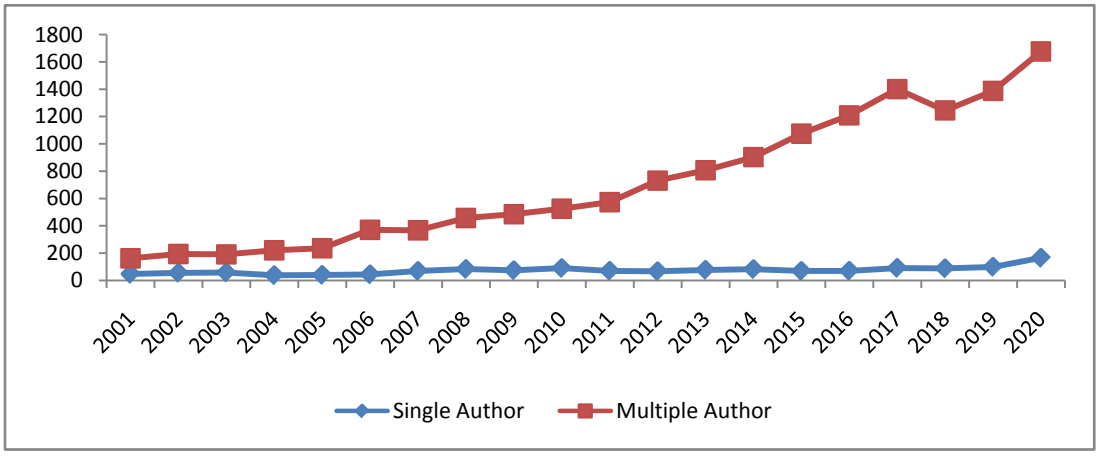

Fig. 7 Single Vs Multiple Authored Output

I. Degree of Collaboration

Table IX suggests that, the percentage of single authored papers is less than that of multi-authored papers. In other words, about 90.5% of the total contributions are collaborative research with different degrees of collaboration. Therefore, in order to determine the degree of collaboration in quantitative terms, the formula suggested by K. Subramanyam has been used and the results given in Table IX. The formula is given below

"C = Nm / Nm + Ns"

Where

C = Degree of Collaboration in a discipline
Nm = Number of multiple authored papers
Ns = Number of single authored papers

Table IX displays that at the aggregate level, the average degree of collaboration is arrived at 0.91.The period-wise analysis indicates that, an increasing trend during the year 2001 (0.78) and it is increased as 0.95in the year 2016. This brings out surely that there exists a higher level of degree of collaborative research in Aesthetic Plastic Surgery.

TABLE IX SHOWING YEAR-WISE DISTRIBUTIONOF DEGREE OF COLLABORATION

Sl. No.	Year	Single Author	Multiple Author	Degree of Collaboration
1	2001	47	162	0.78
2	2002	55	194	0.78
3	2003	58	191	0.77
4	2004	38	221	0.85
5	2005	40	236	0.86
6	2006	44	371	0.89
7	2007	69	367	0.84
8	2008	83	457	0.85
9	2009	74	485	0.87
10	2010	90	525	0.85
11	2011	70	573	0.89
12	2012	67	731	0.92
13	2013	77	807	0.91
14	2014	82	903	0.92
15	2015	69	1075	0.94
16	2016	70	1209	0.95
17	2017	91	1401	0.94
18	2018	88	1245	0.93
19	2019	99	1388	0.93
20	2020	165	1677	0.91
Total		1476	14218	0.91

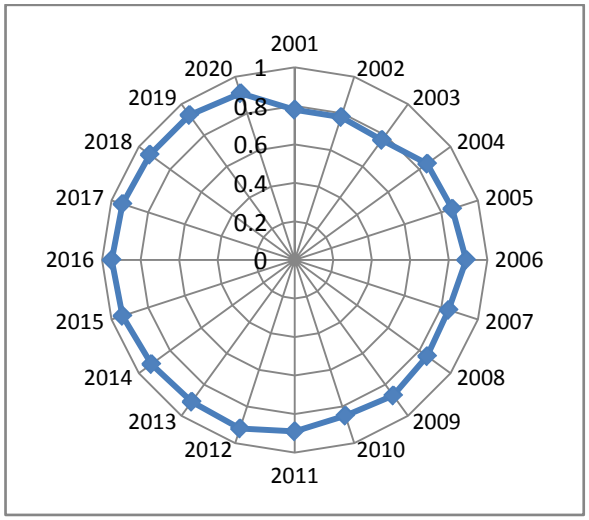

Fig. 8 Year-wise Distribution of Degree of Collaboration

VII. CONCLUSION

It is found that a complete of 15711 records within the field of Aesthetic Plastic Surgery. It is also found that recent years the publication of records is high. It is seen that the journal articles covered maximum number of records. Maximum number of records has been in English language. Twenty nine core journals were identified in the field of Aesthetic Plastic Surgery. Maximum records have been covered by more than five authors. The meager percentage of records represents anonymous authorship. The average degree of collaboration of this study arrived at 0.91. It shows that multi-authored papers dominated within the field of Aesthetic Plastic Surgery literature.

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