

Pancreas Transplantation: A Scientometric Assessment of Global Publications Output during 2008-17

BM Gupta¹ and Ritu Gupta^{2*}

¹National Institute of Science, Technology and Development Studies, CSIR, New Delhi, India

²Formerly with Sri Venkateshwara University, Tirupathi, India

*Corresponding Author: Ritu Gupta, Formerly with Sri Venkateshwara University, Tirupathi, India.

Received: March 25, 2018; Published: June 27, 2018

Abstract

The present study examined 8758 global publications in pancreas transplantation, as indexed in Scopus database during 2008-17, with a view to understand their growth rate, global share, citation impact, international collaborative papers share, distribution of publications by broad subjects, productivity and citation profile of top organizations and authors, preferred media of communication and bibliographic characteristics of high cited papers. The global publications registered an annual average growth rate of -2.12% and its citation impact averaged to 17.35 citations per paper. Among the top 10 countries, the global share ranged from 3.17% to 40.20%, with USA contributing the largest share of 40.20%, followed by China (8.68%), Japan (6.83%), Germany (6.75%), etc. 90.42% of the cumulative global publication share comes from top 10 countries during 2008-17, showing increase from 89.90% to 90.99% from 2008-12 to 2013-17. Medicine, among seven broad subjects, contributed the largest publications share of 83.26%, followed by biochemistry, genetics and molecular biology (31.53%), immunology and microbiology (7.55%), engineering (6.97%) and pharmacology, toxicology and pharmaceuticals (4.89%) during 2008-17. Among various organizations and authors contributing to global pancreas transplantation research, the 15 most productive global organizations and authors together contributed 24.93% and 12.65% respectively as their share of global publication output and 42.06% and 14.93% respectively as their share of global citation output during 2008-17. Amongst 8568 journal papers (in 1456 journals) in global pancreas transplantation research, the top 20 most productive journals contributed 37.27% share of total journal publication output during 2008-17. Two Hundred twenty (220) publications were found to be high cited, as they registered citations from 100 to 2037 during 2008-17 and they together received 47152 citations, which averaged to 214.33 citations per paper.

Keywords: Pancreas Transplantation; Scientometric Assessment; Global Publications

Introduction

Pancreas is an organ that lies behind the lower part of your stomach and its main functions is to make insulin, a hormone that regulates the absorption of sugar (glucose) into your cells. In situations, it doesn't make enough insulin, it leads to rise in blood sugar levels, resulting in type 1 diabetes, If your pancreas. Most pancreas transplants are done to treat type 1- diabetes. A pancreas transplant is a surgical procedure to place a healthy pancreas from a deceased donor into a person whose pancreas no longer functions properly. Although it's possible for a living donor to donate part of a pancreas, nearly all pancreas transplants involve a deceased-donor pancreas. A pancreas transplant can restore normal insulin production and improve blood sugar control in people with diabetes. But it is typically reserved for those with serious diabetes complications, because the side effects of a pancreas transplant are significant [1,2].

Pancreas transplant may be worth considering for persons that: (i) Type 1 diabetes that can't be controlled with standard treatment, (ii) Frequent insulin reactions; (ii) Consistently poor blood sugar control and (iv) Severe kidney damage. Pancreas transplants may also, in some cases treat type 2 diabetes. Rarely, pancreas transplants may be used in the treatment of pancreatic, bile duct or other cancers. There are several different types of pancreas transplants, including: (i) Pancreas transplant alone; (ii) Combined kidney-pancreas transplant; (iii) Pancreas-after-kidney transplant; and (iv) Pancreatic islet cell transplant [1,2].

Literature Review

There is no specific bibliometric study on pancreas transplantation research output in the past. However, there are few bibliometric studies focusing on transplantation research as well as on pancreas related research. Among transplantation research, Pu, Lyu and Su [3] compared the quantity and quality of scientific publications (47 141 articles) in transplantation fields appearing in 25 transplantation journals from 2006 to 2015, covered in Web of Science database and were written by researchers from Mainland China, Japan, South Korea and Taiwan in the East Asia region. Aslani, Khedmat, Assari and Simforoosh [4] described the characteristics of the transplantation-related research efforts (11371 articles published in 91 Iranian journals) with respect to the domestic published works in Iran, using Medax (Iranian database for indexing medical articles) between 1993 and 2003. O'Sullivan and Hurley [5] presented the use of bibliometric analysis in the context of transplantation as a whole and also to subdivide the top cited papers within the field according to clinical versus scientific origin. Papers ranking in the top 100 were published in 16 journals. A total of 48 of the top 100 papers were scientific with 52 clinical. The majority of the top cited papers (67) originated in the USA and was published between 2000 and 2009. The New England Journal of Medicine published the majority of the top 100 papers in transplantation (24), followed by Transplantation (21) and Nature (18). This article provides a valuable perspective on this field by outlining the key publications and highlighting the importance of translational research in advancing the progress. Among pancreas research, recent bibliometric analysis of research output has been undertaken in overall pancreas research [6], acute pancreatitis research [7], chronic pancreatitis research [8] and pancreatic cancer research [9]. The focus of these four papers were growth rate, citation impact, international collaboration, broad subject-wise distribution, productivity of leading organizations, authors, journals and characteristics of high cited papers. In view of the absence of any past bibliometric study devoted to pancreas transplantation, the authors decided to undertake the present study,

Objectives

Based on publications covered and indexed in Scopus database, the present study analyses the global pancreas transplantation research during 2008-17. In particular, the study analyses the growth rate in global publications; publication output, global share and citation impact of world and top 10 most productive countries; its broad distribution of output by broad subject areas; its most productive organizations and authors, in terms of publication output and citation impact; its leading medium of communication, particularly the most productive journals and its bibliographical characteristics of top 220 highly cited papers.

Methodology

Several quantitative and qualitative bibliometric indicators have been used in this study to measure the performance of global pancreas transplantation research. The basic publication data for the present study was retrieved and downloaded from the Scopus database (<http://www.scopus.com>) for 10 years during 2008-17. For retrieving publication data from the Scopus database, the authors have used the Keyword such as "Pancreas transplantation" in "Keyword" tag or "Article Title" tag and further restricting the search to the period 2008-17 in "date range tag" for searching the global publication data on pancreas transplantation and this becomes the main search string. When the main search string with restricted to individual top 10 most productive country name in "country tag", the publication data on the individual country in pancreas transplantation were obtained. The search string is further refined, as provided in Scopus database, by restricting to "subject area tag", "country tag", "source title tag", "journal title name" and "affiliation tag", to get information on the distribution of publications by subject, collaborating countries, author-wise, organization-wise and journal-wise, etc. For citation data, citations to publications were also collected from the date of publication till 1 March 2018.

(KEY(Pancreas transplantation) OR TITLE(Pancreas transplantation)) AND PUBYEAR > 2007 AND PUBYEAR < 2018.

Analysis

The world has published 8758 publications on pancreas transplantation research in 10 years during 2008-17, which decreased from 869 publications in 2008 to 693 publications in 2017, registering annual average growth rates of -2.12%. The cumulative growth of world publications on pancreas transplantation decreased from 4574 during 2008-12 to 4184 publications during 2013-17, witnessing a growth rate of -8.53%. The average citation per publication (CPP) registered by global publications on pancreas transplantation research was 17.35 during 2008-17, which decreased from 24.38 CPP during 2008-12 to 9.67 CPP during 2013-17 (Table 1).

Publication Period	World		
	TP	TC	CPP
2008	869	26067	30.00
2009	927	26745	28.85
2010	980	22413	22.87
2011	911	19269	21.15
2012	887	17041	19.21
2013	948	17341	18.29
2014	832	10494	12.61
2015	878	7737	8.81
2016	833	3668	4.40
2017	693	1205	1.74
2008-12	4574	111535	24.38
2013-17	4184	40445	9.67
2008-17	8758	151980	17.35

Table 1: World Literature on Pancreas Transplantation: Growth and Citation Impact, 2008-17.

TP: Total Papers; TC: Total Citations; CPP: Citations Per Paper

Global Publication Share and Citation Impact of Top 10 Most Productive Countries

The global pancreas transplantation research output originated in 87 countries during 2008-17, of which 63 countries contributed 1 - 50 papers each, 7 countries 51 - 100 papers each, 12 countries 101 - 500 papers each, 4 countries 501 - 800 papers each and 1 country 3521 papers during 2008-17. Table 2 lists the output of top 10 most productive countries in pancreas transplantation research during 2008-17. The cumulative publication share of 10 most productive countries in pancreas transplantation research was 90.42% of the world output during 2008-17, which increased from 89.90% during 2008-12 to 90.99% during 2013-17. Individually, the global publication share of these 10 countries varied from 3.17% to 40.20% during 2008-17, with highest publication share (40.20%) coming from USA, followed by China (8.68%), U.K. (7.11%), Japan and Germany (6.83% and 6.75%), Canada and Italy (5.59% and 5.32%), France, Australia and Spain (from 3.17% to 3.56%) during 2008-17. The global publication share has increased by 2.70% in China, followed by 1.38% in Australia, 1.30% in U.K., 0.25% in Italy and 0.04% in Canada, as against decrease by 2.89% in USA, 0.70% in Germany, 0.59% in Spain, 0.26% in Japan and 0.14% in France from 2008-12 to 2013-16. Six out of 10 countries have scored relative citation index more than 1.27: France (1.77), Australia (1.62), Canada (1.60), USA (1.40), Germany (1.32) and Italy (1.30) during 2008-17.

S. No	Name of Country	Number of Publications			Share of Publications			TC	CPP	ICP	%ICP	RCI
		2008-12	2013-17	2008-17	2008-12	2013-17	2008-17					
1	USA	1902	1619	3521	41.58	38.70	40.20	85577	24.30	997	28.32	1.40
2	China	338	422	760	7.39	10.09	8.68	9455	12.44	222	29.21	0.72
3	U.K.	297	326	623	6.49	7.79	7.11	13613	21.85	254	40.77	1.26
4	Japan	318	280	598	6.95	6.69	6.83	8785	14.69	187	31.27	0.85
5	Germany	324	267	591	7.08	6.38	6.75	13577	22.97	254	42.98	1.32
6	Canada	255	235	490	5.57	5.62	5.59	13579	27.71	213	43.47	1.60
7	Italy	238	228	466	5.20	5.45	5.32	10473	22.47	226	48.50	1.30
8	France	166	146	312	3.63	3.49	3.56	9593	30.75	143	45.83	1.77
9	Australia	116	164	280	2.54	3.92	3.20	7888	28.17	113	40.36	1.62
10	Spain	158	120	278	3.45	2.87	3.17	4812	17.31	82	29.50	1.00
	Total	4112	3807	7919	89.90	90.99	90.42	177352	22.40	2691	33.98	1.29
	World Total	4574	4184	8758				151980	17.35			

Table 2: Publication Output, Global Publication Share and International Collaborative Publications of Top 10 Most Productive Countries in Pancreas Transplantation Research during 2008-17.

Subject-Wise Distribution of Research Output

As per the Scopus database classification, the global pancreas transplantation research output is distributed across five sub-fields during 2008-17. Among sub-fields, medicine registered the highest publications share (83.26%), followed by biochemistry, genetics and molecular biology (31.53%), immunology and microbiology (7.55%), engineering (6.97%) and pharmacology, toxicology and pharmaceuticals (4.89%) during 2008-17. The publication activity, as seen through activity index from 2008-12 to 2013-17, witnessed decrease in medicine (from 102.01 to 97.80), immunology and microbiology (from 108.92 to 90.25), engineering (from 100.13 to 99.86) and pharmacology, toxicology and pharmaceuticals (from 108.71 to 90.48), as against increase in biochemistry, genetics and molecular biology (from 93.41 to 107.20) from 2008-12 to 2013-17. Immunology and microbiology registered the highest citation per paper of 22.52 among five subjects, followed by pharmacology, toxicology and pharmaceuticals (20.63), biochemistry, genetics and molecular biology (20.28), engineering (17.46) and medicine (15.68) during 2008-17 (Table 3).

S. No	Subject*	Number of Papers (TP)			Activity Index		Total Citations	CPP	%TP
		2008-12	2013-17	2008-17	2008-12	2013-17			
1	Medicine	3885	3407	7292	102.01	97.80	114319	15.68	83.26
2	Biochemistry, Genetics and Molecular Biology	1347	1414	2761	93.41	107.20	56001	20.28	31.53
3	Immunology and Microbiology	376	285	661	108.92	90.25	14888	22.52	7.55
4	Engineering	319	291	610	100.13	99.86	10650	17.46	6.97
5	Pharmacology, Toxicology and Pharmaceuticals	243	185	428	108.71	90.48	8830	20.63	4.89
	World Output	4574	4184	8758					

Table 3: Subject-Wise Breakup of Global Publications in Pancreas Transplantation Research during 2008-17.

*CPP: Citation per Paper

Profile of Top 15 Most Productive Organizations

1614 organizations participated in global pancreas transplantation research, of which 1110 organizations contributed 1 - 10 papers each, 256 organizations 11 - 20 papers each, 104 organizations 21 - 30 papers each, 55 organizations 31-40 papers each, 25 organizations 41-50 papers each, 52 organizations 51 - 100 papers each and 12 organizations more than 100 papers each. The productivity of 15 most productive organizations in global pancreas transplantation research varied from 100 to 265 publications and together contributed 24.93% (2183 publications) publication share and 42.06% (63930) citation share to its cumulative publications output during 2008-17. The scientometric profile of these 15 organizations is presented in table 4.

S. No	Name of the Organization	TP	TC	CPP	HI	ICP	%ICP	RCI
1	University of Minnesota Twin Cities, USA	265	6683	25.22	44	80	30.19	1.45
2	University of Miami, USA	220	5027	22.85	29	99	45.00	1.32
3	Harvard Medical School, USA	194	8222	42.38	41	92	47.42	2.44
4	University of Alberta, Canada	194	5546	28.59	38	88	45.36	1.65
5	Diabetes Research Institute, Miami, USA	151	3795	25.13	36	74	49.01	1.45
6	University of Pittsburg, USA	145	5496	37.90	36	57	39.31	2.18
7	INSERN, France	134	4242	31.66	31	51	38.06	1.82
8	IRCC San Raffaele Scientific Institute, Italy	123	3179	25.85	28	64	52.03	1.49
9	Uppsala University, Sweden	122	2271	18.61	24	51	41.80	1.07
10	Massachusetts General Hospital, USA	113	5270	46.64	32	47	41.59	2.69
11	University of California, San Francisco, USA	110	2926	26.60	31	28	25.45	1.53
12	Hopitaux Universitaires de Geneve, Switzerland	109	2073	19.02	22	54	49.54	1.10
13	University of Pennsylvania, USA	103	4182	40.60	25	37	35.92	2.34
14	University of British Columbia, Canada	100	2889	28.89	27	43	43.00	1.67
15	Leiden University Medical Centre, Netherland	100	2129	21.29	23	55	55.00	1.23
	Total of 15 organizations	2183	63930	29.29	31.13	920	42.14	1.69
	Total of World	8758	151980	17.35				
	Share of top 15 organizations in World's total	24.93	42.06					

Table 4: Scientometric Profile of Top 15 Most Productive Global Organizations in Pancreas Transplantation Research during 2008-17. TP: Total Papers; TC: Total Citations; CPP: Citations Per Paper; HI: h-index; ICP: International Collaborative Papers; RCI: Relative Citation Index

- Five organizations have registered higher publications output than the group average of 145.53: University of Minnesota Twin Cities, USA (265 papers), University of Miami, USA (220 papers), Harvard Medical School, USA and University of Alberta, Canada (194 papers) and Diabetes Research Institute, Miami, USA (151 papers) during 2008-17;
- Five organizations have registered more than the average citation per publication (29.29) Massachusetts General Hospital, USA (46.64), Harvard Medical School, USA (42.38), University of Pennsylvania, USA (40.60), University of Pittsburg, USA (37.9) and INSERN, France (31.66) during 2008-17;
- Eight organizations have achieved more than the average share of international collaborative publications (42.14%): Leiden University Medical Centre, Netherland (55.0%), IRCC San Raffaele Scientific Institute, Italy (52.03%), Hopitaux Universitaires de Geneve, Switzerland (49.54%), Diabetes Research Institute, Miami, USA (49.01%), Harvard Medical School, USA (47.42%), University of Alberta, Canada (45.36%), University of Miami, USA (45.0%) and University of British Columbia, Canada (43.0%) during 2008-17;
- Five organizations have registered the relative citation index more than average (1.69): Massachusetts General Hospital, USA (2.69), Harvard Medical School, USA (2.44), University of Pennsylvania, USA (2.34), University of Pittsburg, USA (2.18) and INSERN, France (1.82) during 2008-17.

Profile of Top 15 Most Productive Authors

2098 authors participated in global pancreas transplantation research, of which 1576 authors contributed 1 - 10 papers each, 410 authors 11 - 20 papers each, 59 authors 21 - 30 papers each, 29 authors 31 - 40 papers, 6 authors 41 - 50 papers each, 17 authors 51 - 100 papers each and 1 author more than 100 papers. The productivity of 15 most productive authors in pancreas transplantation research varied from 54 to 121 publications and together contributed 12.65% (1108 publications) publication share and 14.93% (22689) citation share to its cumulative publications output during 2008-17. The scientometric profile of these 15 authors is presented in table 5.

- Six authors have registered higher publications output than the group average of 73.87: C. Ricordi (121 papers), S. Matsumoto (91 papers), D.E.R. Sutherland (90 papers), A.M.J. Shapiro (89 papers), B.J. Hering (83 papers), B. Naziruddin (80 papers) during 2008-17;
- Seven authors have registered more than the average citation per publication (20.48) of all authors: B.J. Hering (32.47), A. Pileggi (27.36), J. Oberholzer (26.79), A.M.J. Shapiro (25.12), C.Ricordi (24.6), D.E.R. Sutherland (22.57) and O. Korsgren (21.64) during 2008-17;
- Seven authors have achieved more than the average share of international collaborative publications (45.94%) of all authors: T. Berney (66.67%), A. Pileggi (59.02%), S. Matsumoto (58.24%), O. Korsgren (58.21%), H. Noguchi (57.63%), C. Ricordi (54.55%) and J. Oberholzer (47.37%) during 2008-17;
- Seven authors registered the relative citation index more than average (1.18) of all authors: B.J. Hering (1.87), A. Pileggi (1.58), J. Oberholzer (1.54), A.M.J. Shapiro (1.45), C. Ricordi (1.42), D.E.R. Sutherland (1.30), and O. Korsgren (1.25) during 2008-17.

S. No	Name of the Author	Affiliation of the Author	TP	TC	CPP	HI	ICP	%ICP	RCI
1	C. Ricordi	Diabetes Research Institute, Miami, USA	121	2977	24.60	33	66	54.55	1.42
2	S. Matsumoto	Bayers All Saint Islet Cell Lab., Texas, USA	91	1203	13.22	19	53	58.24	0.76
3	D.E.R. Sutherland	University of Minnesota Twin Cities, USA	90	2031	22.57	25	19	21.11	1.30
4	A.M.J. Shapiro	University of Alberta, Canada	89	2236	25.12	24	30	33.71	1.45
5	B.J. Hering	University of Minnesota Twin Cities, USA	83	2695	32.47	28	30	36.14	1.87
6	B. Naziruddin	Bayers All Saint Islet Cell Lab., Texas, USA	80	1271	15.89	19	35	43.75	0.92
7	M.F. Levy	Bayers Regional Transplant Institute, Dllas, USA	72	868	12.06	17	30	41.67	0.69
8	T. Berney	Hopitaux Universitaires de Geneve, Switzerland	69	1386	20.09	19	46	66.67	1.16
9	O. Korsgren	Uppsala University, Sweden	67	1450	21.64	20	39	58.21	1.25
10	A. Pileggi	University of Miami, USA	61	1669	27.36	25	36	59.02	1.58
11	L. Piemonti	IRCC San Raffaele Scientific Institute, Italy	60	1092	18.20	19	20	33.33	1.05
12	H. Noguchi	Bayers All Saint Islet Cell Lab., Texas, USA	59	740	12.54	17	34	57.63	0.72
13	J. Oberholzer	University of Illinois at Chicago, USA	57	1527	26.79	19	27	47.37	1.54
14	M. Takita	Bayers All Saint Islet Cell Lab., Texas, USA	55	635	11.55	13	24	43.64	0.67
15	T. Kin	University of Alberta, Canada	54	909	16.83	18	20	37.04	0.97
		Total of 15 authors	1108	22689	20.48	21.00	509	45.94	1.18
		Total of the World	8758	151980	17.35				
		Share of 15 authors in World output	12.65	14.93					

Table 5: Top 15 Most Productive Authors in Pancreas Transplantation Research, 2008-17.

TP: Total Papers; TC: Total Citations; CPP: Citations Per Paper; HI: h-index; ICP: International Collaborative Papers; RCI: Relative Citation Index

Medium of Communication

1573 journals participated in 8568 journal papers in global pancreas transplantation research, of which 1456 journals contributed 1 - 10 papers each, 69 journals 11 - 20 papers each, 20 journals 21 - 30 papers each, 8 journals 31 - 40 papers each, 3 journals 41 - 50 papers each, 6 journals 51 - 100 papers each, 7 journals 101 - 200 papers each and 4 journals more than 201 - 545 papers each. The 20 most productive journals in pancreas transplantation research contributed from 42 to 545 papers and together contributed 37.27% share (3193 papers) to the total journal publication output during 2008-17. The publication share of these top 20 most productive journals decreased from 38.29% to 36.15% from 2008-12 to 2013-17. The most productive journal (with 545 papers) was *Transplantation Proceedings*, followed by *Transplantation* (467 papers), *American Journal of Transplantation* (371 papers), *Cell Transplantation* (250 papers), *PLOS One* (175 papers), *Xenotransplantation* (170 papers), etc. during 2008-17 (Table 6).

S. No	Name of the Journal	Number of Papers		
		2008-12	2013-17	2008-17
1	<i>Transplantation Proceedings</i>	346	199	545
2	<i>Transplantation</i>	281	186	467
3	<i>American Journal of Transplantation</i>	171	200	371
4	<i>Cell Transplantation</i>	148	102	250
5	<i>PLOS One</i>	64	111	175
6	<i>Xenotransplantation</i>	92	78	170
7	<i>Diabetes</i>	87	72	159
8	<i>Clinical Transplantation</i>	80	78	158
9	<i>Transplant International</i>	71	63	134
10	<i>Current Opinion in Organ Transplantation</i>	57	54	111
11	<i>Pancreas</i>	58	49	107
12	<i>Diabetologia</i>	55	44	99
13	<i>Islets</i>	50	24	74
14	<i>Current Diabetes Report</i>	31	31	62
15	<i>Diabetes Care</i>	27	35	62
16	<i>Biomaterials</i>	26	35	61
17	<i>Journal of Immunology</i>	34	17	51
18	<i>Transplant Infectious Disease</i>	21	29	50
19	<i>Oncotarget</i>	0	45	45
20	<i>Experimental and Clinical Transplantation</i>	17	25	42
	Total of 20 Journals	1716	1477	3193
	Total of World	4482	4086	8568
	Share of 20 journals in World journal output	38.29	36.15	37.27

Table 6: List of Top 20 Most Productive Journals in Global Pancreas Transplantation Research during 2008-17.

Highly Cited Papers

There were 220 highly cited papers, which have received citations from 100 to 2037 during 2008-17. These 220 highly cited papers together received 47152 citations, leading to average citation per paper of 214.33

- Of the 220 highly cited papers, 40 involve the participation of single organization (non-collaborative) and 180 involved the participation of two or more organizations (of which 72 national collaborative and 108 international collaborative).
- Among international collaborative papers, the largest participation, was with USA (143 papers), followed by France (25 papers), U.K. (24 papers), Canada (22 papers), Germany (20 papers), Italy (16 papers), Netherland (14 papers), Australia (13 papers), Sweden and Switzerland (10 papers each), Belgium (8 papers), Spain (7 papers), Japan (6 papers), China (5 papers), Austria and Israel (4 papers each), Brazil, India and South Korea (3 papers each) etc.
- Among 220 highly cited papers, 136 appeared as articles, 8 as reviews and 1 each as note, letter, short survey and editorial. The 220 highly cited papers involved the participation of 742 authors and 425 organizations.
- Among high cited papers, the most productive organizations were: Harvard Medical School, USA (22 papers), University of Minnesota, USA and INSERN, France (13 papers each), Massachusetts General Hospital, USA (12 papers), University of Alberta, Canada (10 papers), University of Pittsburg, USA (7 papers), University of Miami, USA, Mayo Clinic, USA and University of Pennsylvania, USA (6 papers each), IRCC San Raffaele Scientific Institute, Italy, Leiden University Medical Centre, Netherland, University of Florida, USA and Hopitaux Universitaires de Geneve, Switzerland (5 papers each), University of California, San Francisco, USA, University of Wisconsin, Madison, USA, University of Illinois at Chicago, USA, University of Toronto, Canada and University of Oxford (4 papers each), V A Medical Centre, USA, University of British Columbia, Canada, Karolinska Institutet, Sweden, University of Chicago, USA and King's College, London, (3 papers each), University of Sydney, Australia and Westmead Hospital, Australia (2 papers each). Among high cited papers, the most productive authors were: B.J. Hering (6 papers), C. Rocordi, D.E.R. Sutherland and A.M.J. Shapiro (4 papers each), T. Berney and J. Oberholzer (3 papers each), O. Korsgren and A. Pileggi (2 papers each), etc.
- These 220 highly cited papers were published in 109 journals, of which 18 papers were published in *American Journal of Transplantation*, 9 papers each in *Transplantation* and *Diabetes*, 7 papers in *Proceeding of NAS of USA*, 6 papers each in *Diabetes Care* and *Nature Biotechnology*, 5 papers each in *Cell Stem Cell*, *Nature* and *Nature Medicine*, 4 papers each in *Journal of Clinical Oncology*, *The Lancet*, *New England Journal of Medicine*, *PLOS One* and *Science*, 3 papers each in *Annual Review of Immunology*, *Cell*, *Journal of Clinical Investigation*, *Science Transnational Medicine* and *Transplant International*, 2 papers each in *Advanced Drug Delivery Review*, *Annals of Surgery*, *Blood*, *Cancer Research*, *Cancer Cells*, *Clinical Cancer Research*, *CA Cancer Journal for Clinicians*, *Current Opinion in Pharmacology*, *Diabetologia*, *Gut*, *Journal of Cystic Fibres*, *Journal of Infectious Diseases*, *Journal of Internal Medicine*, *Journal of National Cancer Institute*, *Nature Review Endocrinology*, *Nature Review Cancer*, *Oncogene*, *Physiology Review*, *Stem Cells* and *Transplant International* and 1 paper in 68 other journals.

Summary

8758 global publications on pancreas transplantation, as indexed in Scopus database, were published during 2008-17 and they decreased from 869 to 693 in the year 2008 to the year 2017, registering -2.12% growths per annum. Their cumulative global publication output on pancreas transplantation research decreased from 4574 to 4184, witnessing -8.53% growth from 2008-12 to 2013-17. The citation impact per paper of global publications in pancreas transplantation research was averaged to 17.35 during 2008-17, however, decreasing from 24.38 during 2008-12 to 9.67 during 2013-17.

The global publication share of the top 10 most productive countries in pancreas transplantation research varied from 3.17% to 40.20% during 2008-17, with highest publication share (40.20%) coming from USA, followed by China (8.68%), U.K. (7.11%), Japan and Germany (6.83% and 6.75%), Canada and Italy (5.59% and 5.32%), France, Australia and Spain (from 3.17% to 3.56%) during 2008-17. Together these top 10 countries contributed 90.42% global share during 2008-17, increasing from 89.90% during 2008-12 to 90.99% during 2013-17. The global publication share has increased in China, Australia, U.K., Italy and Canada, as against decrease in USA, Germany, Spain, Japan and France from 2008-12 to 2013-16. Out of 10 countries, six have scored relative citation index more than the average of 1.27: France (1.77), Australia (1.62), Canada (1.60), USA (1.40), Germany (1.32) and Italy (1.30) during 2008-17.

8758 global publications on pancreas transplantation, as indexed in Scopus database, were published during 2008-17 and they decreased from 869 to 693 in the year 2008 to the year 2017, registering -2.12% growths per annum. Their cumulative global publication output on pancreas transplantation research decreased from 4574 to 4184, witnessing -8.53% growth from 2008-12 to 2013-17. The citation impact per paper of global publications in pancreas transplantation research was averaged to 17.35 during 2008-17, however, decreasing from 24.38 during 2008-12 to 9.67 during 2013-17.

Medicine, contributed the largest publications share of 83.26% in pancreas transplantation research, followed by biochemistry, genetics and molecular biology (31.53%), immunology and microbiology (7.55%), engineering (6.97%) and pharmacology, toxicology and pharmaceuticals (4.89%) during 2008-17. As per the Scopus database classification, the global pancreas transplantation research output is distributed across seven sub-fields during 2008-17. The publication activity, showed decrease in medicine, immunology and microbiology, engineering and pharmacology, toxicology and pharmaceuticals, as against increase in biochemistry, genetics and molecular biology from 2008-12 to 2013-17. Among seven subjects, immunology and microbiology registered the highest citation per paper of 22.52 among five subjects, followed by pharmacology, toxicology and pharmaceuticals (920.63), biochemistry, genetics and molecular biology (20.28), engineering (17.46) and medicine (15.68) during 2008-17.

Among various organizations and authors contributing to pancreas transplantation research, the 15 most productive global organizations and authors together contributed 24.93% and 12.65% respectively as their share of global publication output and 42.06% and 14.93% respectively as their share of global citation output during 2008-17. The leading organizations in research productivity were: University of Minnesota Twin Cities, USA (265 papers), University of Miami, USA (220 papers), Harvard Medical School, USA and University of Alberta, Canada (194 papers) and Diabetes Research Institute, Miami, USA (151 papers) during 2008-17. The leading organizations in terms of relative citation index were: Massachusetts General Hospital, USA (46.64), Harvard Medical School, USA (42.38), University of Pennsylvania, USA (40.60), University of Pittsburg, USA (37.9) and INSERN, France (31.66) during 2008-17.

Transplantation Proceedings was the most productive journal (with 545 papers) in pancreas transplantation output, followed by Transplantation (467 papers), American Journal of Transplantation (371 papers), Cell Transplantation (250 papers), PLOS One (175 papers), Xenotransplantation (170 papers), etc. during 2008-17. Among the 8568 journal papers (in 1456 journals) in pancreas transplantation research, the top 20 most productive journals contributed 37.27% share of total journal publication output during 2008-17, which decreased from 38.29% to 36.15% from 2008-12 to 2013-17.

There were 220 highly cited papers, which have received citations from 100 to 2037 during 2008-17 and together have received 47152 citations, with an average citation per paper of 214.33. These 220 highly cited papers resulted from participation of 742 authors and 425 organizations and were published in 109 journals, of which 18 papers were published in *American Journal of Transplantation*, 9 papers each in *Transplantation* and *Diabetes*, 7 papers in *Proceeding of NAS of USA*, 6 papers each in *Diabetes Care* and *Nature Biotechnology*, 5 papers each in *Cell Stem Cell*, *Nature* and *Nature Medicine*, 4 papers each in *Journal of Clinical Oncology*, *The Lancet*, *New England Journal of Medicine*, *PLOS One* and *Science*, etc.

The pancreas transplants are effective therapeutic options to arrest the progression of the complications of diabetes mellitus, and to improve the quality of life for diabetic patients. Multiple iterations of pancreas transplants exist, including: simultaneous pancreas kidney transplant (SPK), pancreas after kidney transplant (PAK), pancreas transplant alone (PTA), and islet cell transplant. The SPK procedure is most commonly performed transplant procedure, and has the highest graft survival post-operative rates. Conclude that there is need for evolving guidelines at national level for building capacity for strengthening, training, research and policy in management of pancreatic transplantation research.

Bibliography

1. Mayo Foundation for Medical Education and Research (MFMER). Pancreas transplant. 1998-2018.
2. Pancreas transplantation (2018).
3. Pu., *et al.* "Bibliometric analysis of scientific publications in transplantation journals from Mainland China, Japan, South Korea and Taiwan between 2006 and 2015". *BMJ Open* 6.8 (2016): e011623.
4. Aslani., *et al.* "Transplantation research in Iran: A bibliometric Study". *Transplantation Proceedings* June 39.4 (2007): 788-789.
5. O'Sullivan K and Hurley JP. "The 100 most cited publications in transplantation". *Annals of Transplantation* 3.19 (2014): 436-443.
6. Gupta BM and Mueen Ahmad KK. "Pancreatitis Research in India: A Scientometric assessment of publications during 2007-2016". *EC Gastroenterology and Digestive System* 5.2 (2018): 37-47.
7. Gupta BM., *et al.* "Acute pancreatitis research in India: A scientific assessment of publications during 2007-2016". *Kenkyu Journal of Gastroenterology* 3 (2018):1-13.
8. Gupta BM., *et al.* "Chronic pancreatitis research in India: A scientometric assessment of publications during 2007-2016". *Kenkyu Journal of Gastroenterology* 3 (2018): 17-31.
9. Gupta BM., *et al.* "Pancreatic cancer research in India: A scientometric assessment of publications during 2007-2016". *EC Gastroenterology and Digestive System* 5.4 (2018): 257-268.

Volume 5 Issue 7 July 2018

©All rights reserved by BM Gupta and Ritu Gupta.