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Literature Review

Pancreatic Cancer Research in India: A Scientometric Assessment of Publications during 2007-16

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Received: January 31, 2018; **Published:** March 19, 2018

Abstract

The present study examined 1168 Indian pancreatic cancer research publications, as indexed in Scopus database during 2007-16, with a view to understand their growth rate, global share, citation impact, international collaborative papers, distribution of publications by broad subjects, productivity and citation profile of top organizations and authors, preferred media of communication and characteristics of high cited papers. The Indian publications registered an annual average growth rate of 14.19%, global share of 2.08%, international collaborative publications share of 26.71% and its citation impact averaged to 19.27 citations per paper. Among broad subjects, medicine contributed the largest publications share of 70.0% in Indian pancreatic cancer output, followed by biochemistry, genetics and molecular biology (32.19%), pharmacology, toxicology and pharmaceutics (16.72%), etc. during 2007-16. Among various organizations and authors contributing to Indian pancreatic cancer research, the top 20 organizations and authors together contributed 43.07% and 26.28% respectively as their share of Indian publication output and 66.98% and 33.13% respectively as their share of Indian citation output during 2007-16. Among 1148 journal papers in Indian pancreatic cancer research, the top 20 journals registered 27.79% share during 2007-16. There were only top 26 highly cited publications, which registered citations from 101 to 4502 during 2007-16 and they together received 10366 citations, which averaged to 370.21 citations per paper. There is a urgent need to increase the publication output, improve research quality and improve international collaboration. Indian government also needs to come up with a policy for identification, screening, diagnosis and treatment of pancreas cancer patients, besides curriculum reform in teaching, capacity building, patient education and political support are badly needed.

Keywords: *Pancreas Research; Indian Publications; Scientometrics; Bibliometrics*

Introduction

The pancreas is an organ which sits deep in the abdomen that sits in front of the spine above the level of the belly button and is in close proximity to many important structures such as the small intestine (the duodenum) and the bile ducts, as well as important blood vessels and nerves. There are two kinds of cells in the pancreas. Exocrine cells make enzymes that are released into the small intestine to help the body digest food. Neuroendocrine pancreas cells (such as islet cells) make several hormones, including insulin and glucagon that help control sugar levels in the blood. Enzymes leave the pancreas via a system of tubes called "ducts" that connect the pancreas to the intestines where the enzymes mix with ingested food [1-3].

Pancreatic cancer arises when cells in the pancreas, a glandular organ behind the stomach, begin to multiply out of control and form a mass. These cancerous cells have the ability to invade other parts of the body. There are two types of pancreatic cancer: (1) cancers of

publications share of 65.06%, followed by Japan (16.35%), U.K. (11.22%), Australia and Germany (8.97% each), Italy (7.05%), France (6.41%), Canada, Saudi Arabia and Spain (5.13% each) during 2007-16.

Medicine, among sub-fields contributed the highest publications share (70.0%), followed by biochemistry, genetics and molecular biology (32.19%), pharmacology, toxicology and pharmaceutics (16.72%) chemistry (5.0%), agricultural and biological sciences (1.88%) and immunology and microbiology (1.64%) during 2007-16. The research activities, as reflected in activity index, showed increase in biochemistry, genetics and molecular biology, pharmacology, toxicology and pharmaceutics and chemistry, as against decrease in medicine, agricultural and biological sciences and immunology and microbiology from 2007-11 to 2012-16.

Among leading organizations and authors participating in India's pancreatic cancer research, the top 20 organizations and authors together contributed 43.07% and 26.28% respectively as their share of Indian publication output and 66.98% and 33.13% respectively as their share of Indian citation output during 2007-16. The leading organizations in research productivity were: TMH-Bombay (78 papers), AIIMS-New Delhi (77 papers), PGIMER-Chandigarh (63 papers), ILBS-New Delhi (30 papers), SGPGIMS- Lucknow (26 papers), etc. The leading organizations in terms of citation impact per paper were: BARC-Bombay (115.57), TMH-Bombay (73.33), PGIMER-Chandigarh (33.29) and AIIMS-New Delhi (30.16) during 2007-16. The leading authors in publication productivity were SV Shrikhande (40 papers), S Phadhye (26 papers), V Bhatia (23 papers), R Gupta, PJ Shukla and SG Barreto (19 papers each) during 2007-16. The leading authors in terms of research impact were A Maitra (98.55), S Phadhye (58.23), A Pandey (44.22), V Bhatia (32.13), SV Shrikhande (24.73) and DN Reddy (24.36) during 2007-16.

Among the total journal output of 1148 papers, the top 20 journals publishing Indian papers in pancreatic cancer together accounted for 27.79% share of total Indian journal publication output during 2007-16. Among journals contributing to Indian pancreatic cancer research, *Journal of Pancreas* was the most productive journals each with 48 papers each, followed by *Indian Journal of Cancer* (24 papers), *Indian Journal of Gastroenterology* and *Journal of Clinical and Diagnostic Research* (22 papers each), *Indian Journal of Surgical Oncology* and *Journal of Cancer Research and Therapeutics* (18 papers each), etc. during 2007-16.

The 26 highly cited publications individually received citations varying from 101 to 4502 in Indian pancreatic cancer research and together these papers received 10366 citations, with 370.21 citations per paper. The 28 high cited papers involve the participation of 977 authors and 613 organizations and were published in published in 24 journals, with 2 papers each in *Cancer Research* and *Proceeding of the National Academy of Sciences of United States* and 1 paper each in other journals.

Concludes that pancreatic cancer research have been a neglected subspecialty in India, both in teaching and research. There is an urgent need to increase the publication output, improve research quality and improve international collaboration. With higher patient coming for treatment and shortage of trained pancreas specialists are some of the challenges that confront pancreas research at the national level. To address the problems with pancreas research in India, Indian government needs to come up with a policy for identification, screening, diagnosis and treatment of pancreas cancer patients, besides curriculum reform in teaching, capacity building, patient education and political support are badly needed.

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Volume 5 Issue 4 April 2018