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Research Article

Multidisciplinary Excellence in Medicine: A Bibliometric Analysis of Book Authorship (1991-2025)

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ABSTRACT

Aim: The main aim of this study is to assess medical book productivity during 1991-2025, by multitalented minds/ authors. Using bibliometric techniques, the study provides a quantitative analysis of his research output and highlights his impact on the field. **Background:** Medical book publishing has been central to the dissemination of medical knowledge, with its growth in India accelerating during the colonial period, particularly in academic hubs such as Calcutta, which emerged as a major centre for medical education and scholarly publishing. Calcutta also gained global recognition when Sir Ronald Ross was awarded the 1902 Nobel Prize in Physiology or Medicine for discovering the mosquito transmission of malaria, a breakthrough achieved through research conducted largely in Calcutta, significantly advancing tropical medicine. The tradition of medical writing dates back to ancient texts like Egypt's *Ebers Papyrus* and India's *Charaka* and *Sushruta Samhitas*, laying the foundation for modern medical publishing. **Methodology:** This study collected data on 3504 medical books publications from Jaypee Digital-Explore Health Science, India, databases during the period of April 12 to October 10, 2025 and other sources. Key details from each publication were carefully selected, checked, and organized using Microsoft Excel and Word. Bibliometric methods were then used to analyze the data for mapping the contributions of multitalented medical authors to medical research. **Findings:** Medical book publishing from 1991-2025 showed substantial growth, with a total of 3,504 books published and a shift from sporadic early output (1991-2002) to a mature, stable phase after 2009, and Relative Growth Rates (ReGR) peaking at 1.30 in 2003 before gradually declining, while Doubling Time (Dt) increased up to 69 years by 2025, indicating maturation. Multi-authored works dominated at 53.59%, with a preference for small collaborative groups, particularly in interdisciplinary fields like Alternative Medicine, Obstetrics & Gynaecology, and Ophthalmology. A core group of highly productive authors, led by Narendra Malhotra (73 books), contributed disproportionately to output, while 73.35% of authors remained single-discipline, highlighting both specialization and the growing role of collaboration in medical knowledge production. It is confirming that a small number of multitalented scholars drive the majority of medical publishing under Jaypee. Finally, Lotka's Law shows the expected inverse relationship between authors and publications, but chi-square analysis indicates significant deviations from this pattern. **Conclusion:** All stakeholders-such as parents, teachers, multitalented authors, book publishers, knowledge converters, and various offline and online vendors-play an important role in strengthening our education system. Intellectual content, its expression and manifestation, and its transformation into usable knowledge are fundamental requirements of an effective information system. Analysing various important sources of knowledge dissemination is a key responsibility of librarians and information scientists. This study, it is hoped, will be highly beneficial to students, researchers, and teachers in supporting effective information retrieval.

Keywords: Bibliometric, Informetric, Medical books, Multitalented minds, Medical scientist, Jaypee Digital-Explore Health Science, P-P Model in education system, Doctor, Nursing professionals, India.

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INTRODUCTION

Medical literature plays a pivotal role in disseminating knowledge, advancing research, and supporting education and clinical practice. The production of medical books is not only an indicator of scholarly productivity but also reflects trends in collaboration, interdisciplinary engagement, and the evolution of scientific knowledge over time. Over the past three decades, the landscape of medical publishing has undergone significant

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changes, with increasing emphasis on multi-authored works, interdisciplinary contributions, and the emergence of prolific and multitalented authors.

The present study provides a comprehensive analysis of 3504 medical books published between 1991 and 2025, examining year-wise publication trends, authorship patterns, disciplinary distribution, and research productivity. It highlights the dynamics of single- and multi-authored works, the rise of collaborative efforts, and the concentration of productivity among a core group of authors. Furthermore, the study explores the representation of various medical disciplines, the role of multitalented authors across multiple domains, and the growth metrics of publications such as Relative Growth Rate (ReGR) and Doubling Time (Dt).

By analysing these patterns, the study aims to offer insights into the evolving trends of medical scholarship, identify areas for potential growth, and inform strategies for fostering collaboration, interdisciplinary research, and sustained productivity in medical publishing. This analysis serves as a valuable resource for educators, researchers, institutions, and publishers seeking to understand and enhance the impact of medical literature.

Background of Medical Book Publishing

Medical book publishing has long been central to the spread of medical knowledge, professional education, and clinical practice worldwide. From early treatises and case reports to contemporary, evidence-based textbooks, medical books serve as foundational educational tools for physicians, allied health professionals, and researchers. In India, the development of medical publishing accelerated during the colonial era, particularly in major academic centres such as Calcutta (now Kolkata), Bombay (Mumbai), and Madras (Chennai). Calcutta, the capital of British India until 1911, became a pivotal hub for medical education and research with institutions like Calcutta Medical College (established in 1835) and the Presidency General Hospital significantly contributing to medical scholarship and publications. The city's role in advancing medical science fostered a publishing environment where clinicians and academics could document and disseminate their expertise (Mahta, 2024).

Calcutta also holds a distinguished place in the history of medical science through its association with the first Nobel Prize in Physiology or Medicine linked to the city's research environment. Sir Ronald Ross, a British medical doctor serving in the Indian Medical Service, was awarded the 1902 Nobel Prize in Medicine for demonstrating that malaria is transmitted by mosquitoes-a breakthrough that laid the foundation for modern malaria control and prevention. His discovery of the complete life cycle of the malarial parasite in mosquitoes, building on work conducted in India and particularly in Calcutta, transformed understanding of disease transmission and had a lasting impact on tropical medicine (nobelprize.org, 2025; Koley, 2025).

Together, the evolution of medical book publishing and Nobel-recognized research connected to Calcutta highlight the city's enduring contribution to the creation, documentation, and dissemination of medical knowledge.

The history of medical books dates back to ancient civilizations, where early texts served as repositories of medical knowledge and practical guidance for physicians. One of the earliest known medical texts is the *"Ebers Papyrus"* from ancient Egypt (c. 1550 BCE), which contains detailed descriptions of diseases, treatments, and surgical procedures (Nunn, 1996). In ancient India, texts like the *"Charaka Samhita"* and *"Sushruta Samhita" (c.* 600-200 BCE) documented comprehensive systems of medicine, including diagnostics, therapeutics, and surgical techniques, forming the foundation of Ayurveda (Dash, 2002). These early medical writings established the tradition of recording and disseminating medical knowledge, which gradually evolved into the structured medical book publishing we see today.

Although numerous bibliometric studies have been conducted by information scientists, similar research using the datasets of medical books appears to be lacking (Koley & Sen, 2016; Koley, 2025; Dutta, 2019; Ravichandra & Rajendra, 2024; Prashantha *et al*., 2022; Chander & Singh, 2021; Jagan *et al*., 2025; Padmavathi *et al*., 2021).

Objectives of the Study

The main objectives of this study are to:

- Examine the year-wise growth of medical book publications during the period 1991-2025.
- Analyse year-wise authorship patterns of medical books.
- Identify subject-wise authorship trends in medical book publications.
- Assess the research productivity of medical authors.
- Study publication patterns of multitalented authors contributing to medical literature.
- Analyse the multidisciplinary background of contributing authors.
- Test the validity of Lotka's Law in the context of medical book publications.
- Apply the Chi-square analytical method to examine the statistical significance of authorship and productivity patterns.

SCOPE AND METHODOLOGY

This study collected comprehensive data on 3,504 medical book publications indexed in the Jaypee Digital-Explore Health Science database during the period from April 12 to October 10, 2025, along with relevant records from other supporting sources.

Detailed bibliographic information from each publication-such as authorship, title, year of publication, and collaborative details-was carefully selected, verified, and systematically organized using Microsoft Excel and Microsoft Word to ensure accuracy and consistency.

The collected data were analysed using well-established bibliometric techniques to examine patterns and trends in medical research output. These methods included the analysis of authorship patterns and collaborative behaviour through indicators such as Degree of Collaboration (DC), Collaboration Coefficient (CC), Collaboration Index (CI), and Modified Collaboration Coefficient (MCC). In addition, measures of research productivity, Relative Growth Rate (ReGR), and Doubling Time (Dt) were applied to assess the growth dynamics of medical publications over the study period. Lotka's Law and the Chi-Square Test were further employed to evaluate author productivity distribution and to test the statistical significance of observed patterns. Through these analytical approaches, the study effectively mapped the contributions of multitalented medical authors and highlighted their role in advancing medical research and scholarly communication.

Bibliometric Analysis

Standard *bibliometric techniques* were applied to assess *publication productivity, authorship patterns, co-authorship networks*, formulas for DC, CI, CC, MCC, ReGR and Dt, etc. were calculated to evaluate research performance.

RESULTS

Year wise publications of Books

Table 1 and Figure 1 present the yearly distribution of single-authored and multi-authored medical books published between 1991 and 2025, along with their percentages of the total and the DC. During this period, a total of 3504 books were published, of which 1626 (46.41%) were single-authored and 1878 (53.59%) were multi-authored, indicating a slightly higher tendency toward collaborative publishing.

Degree of Collaboration

Table 2 shows the year-wise Degree of Collaboration (DC) across the study period.

Authorship Pattern

Table 3 illustrates the authorship pattern of medical books published between 1991 and 2025. Out of a total of 3504 books, single-authored works dominate with 1626 books, accounting for 46.41% of the total publications.

Year wise Authorship Pattern

Table 4 and Figure 2 present the year-wise authorship pattern of medical books published between 1991 and 2025.

Subject wise Authorship Pattern

Table 5 presents the subject-wise authorship pattern of 3,504 articles. Single-authored papers dominated the literature (46.41%), followed by double-authored (27.36%) and triple-authored contributions (14.67%).

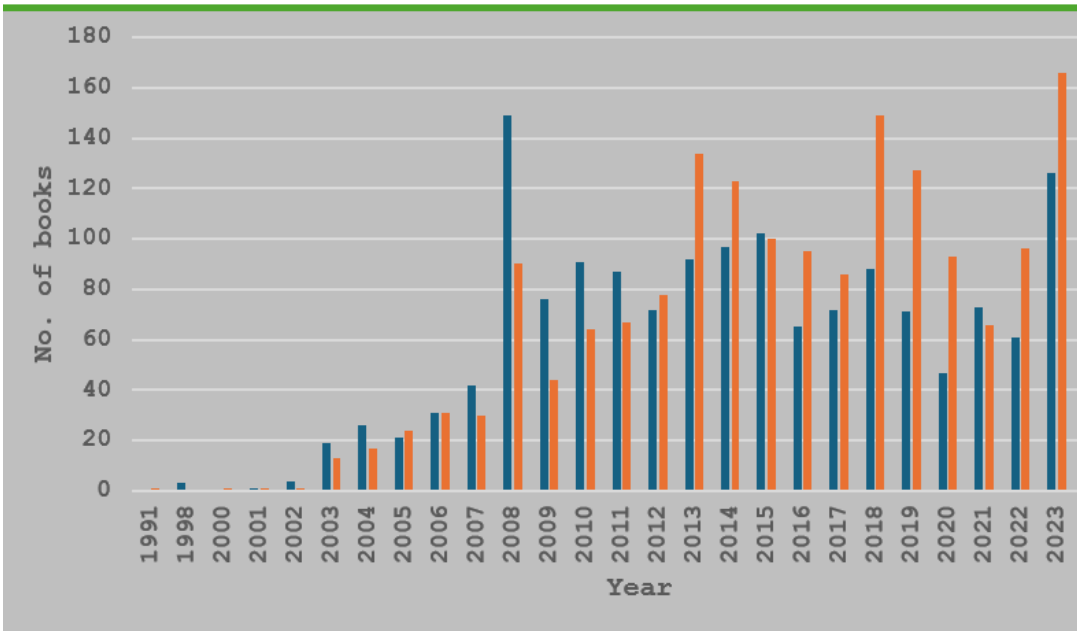

Figure 1: Year wise single-and multiple-authored books.

Table 1: Year wise publications of books.

Year	Single-authored Books		Multi-authored Books		Total	%-age	DC
	Total	%-age	Total	%-age			
1991			1	0.06	1	0.03	1.00
1998	3	0.18			3	0.08	0.00
2000			1	0.06	1	0.03	1.00
2001	1	0.07	1	0.06	2	0.06	0.50
2002	4	0.26	1	0.06	5	0.15	0.20
2003	19	1.17	13	0.69	32	0.92	0.41
2004	26	1.59	17	0.91	43	1.23	0.39
2005	21	1.29	24	1.28	45	1.28	0.53
2006	31	1.92	31	1.66	62	1.76	0.50
2007	42	2.58	30	1.59	72	2.06	0.42
2008	149	9.17	90	4.79	239	6.83	0.38
2009	76	4.67	44	2.35	120	3.43	0.37
2010	91	5.59	64	3.41	155	4.43	0.41
2011	87	5.36	67	3.56	154	4.39	0.43
2012	72	4.43	78	4.16	150	4.28	0.52
2013	92	5.66	134	7.14	226	6.45	0.59
2014	97	5.97	123	6.55	220	6.27	0.55
2015	102	6.28	100	5.33	202	5.77	0.49
2016	65	3.99	95	5.05	160	4.56	0.59
2017	72	4.42	86	4.57	158	4.51	0.54
2018	88	5.42	149	7.94	237	6.76	0.62
2019	71	4.37	127	6.76	198	5.66	0.64
2020	47	2.89	93	4.95	140	3.99	0.66
2021	73	4.48	66	3.53	139	3.96	0.47
2022	61	3.75	96	5.05	157	4.48	0.61
2023	126	7.75	166	8.83	292	8.34	0.56
2024	99	6.08	171	9.12	270	7.7	0.63
2025	11	0.66	10	0.54	21	0.59	0.47
Total	1626	100	1878	100	3504	100	0.54
%							

Research Productivity

Table 6 and Figure 3 highlight the research productivity of leading authors based on the number of books published.

Discipline wise Authorship Pattern

Table 7 presents the discipline-wise authorship pattern of medical book authors.

Multitalented Minds

Table 8 highlights the contributions of multitalented authors who have published 10 or more books across multiple medical disciplines.

Relative Growth Rate (ReGR) and Doubling Time (Dt)

Table 9 presents the values of Relative Growth Rate (ReGR) and Doubling Time (Dt) of medical books published during 1991-2025.

Validation of Lotka's Law

Table 10 demonstrates the application of Lotka's Law to authorship productivity in medical book publishing. The observed distribution shows that a very large proportion of authors (1,991) contributed only one book, while the number of authors decreased sharply with an increase in the number of books published (Chander & Singh, 2021; Kumar, 2010; Rathika

et al., 2020; Sen, 2010). Figure 4 shows close relationship between two authorship curves.

Lotka's Law is:

Y=C/ Xn

Where,

X=Number of papers published by each author.

Y=Relative frequency of authors publishing X number of papers.

C=Constant which is to calculated from data set of a study.

n=Lotka's exponent (its value may be *n*=2 or calculated from data set of a study.

Calculation for C

Putting X=1 and Y (O)=1991 from 2nd column of Table 10 in the above equation, we get

1991/ 1^n or C= 1991/1 [as 1^n=1 as per rule of indices], So, C=1991.

n=2 (in ideal cases).

Similarly, calculation of expected number of authors may find for the 3rd column.

When X =1, C=1991, and n =2, Y(E)=1991/ 1^2 =1991.

X=2, C= 1991 and n =2, Y (E)=1991/ 2^2=1991/4=498 and so on.

Table 2: **Year wise Degree of Collaboration.**

DC Values	Years	Number of years
1	1991, 2000	02
0.5	2001, 2006	02
>0.5	2005, 2012-2014, 2016-2020, 2022-2024	12
<0.5	2002-2004, 2007-2011, 2015, 2021, 2025	12

Table 3: **Authorship Pattern of Medical books.**

Authorship	No. of Books	%-age	Cumulative %
1	1626	46.41	46.41
2	959	27.36	73.77
3	514	14.67	88.44
4	242	6.91	95.35
5	90	2.56	97.91
6	36	1.03	98.94
7	20	0.57	99.51
8	6	0.18	99.69
9	7	0.19	99.88
11	2	0.06	99.94
12	2	0.06	100.00
	3504	100	

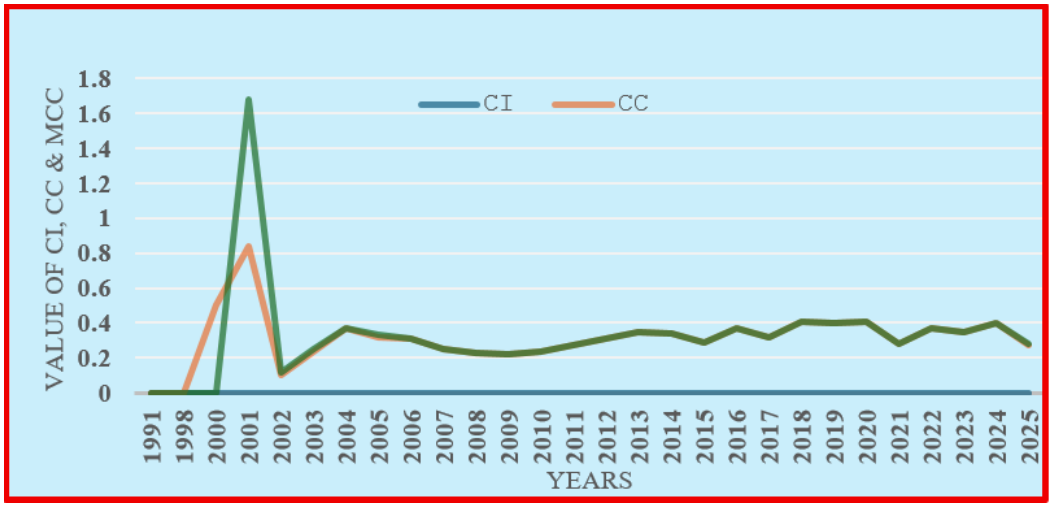

Figure 2: Co-relation between CI, CC, and MC.

Table 4: Year wise authorship pattern.

Year	SG	DB	TR	FR	FV	SX	SV	ET	NN	EL	TL	Total Books	CI	CC	MCC
1991		1										1	2.00	0.00	0.00
1998	3											3	3.00	0.00	0.00
2000		1										1	2.00	0.50	0.00
2001	1		1									2	1.50	0.84	1.68
2002	4	1										5	1.20	0.10	0.12
2003	19	6	6	1								32	1.53	0.24	0.25
2004	26	11	5	1								43	1.56	0.37	0.37
2005	21	12	9	3								45	1.69	0.32	0.33
2006	31	15	8	7	1							62	2.06	0.31	0.31
2007	42	16	7	7								72	1.71	0.25	0.25
2008	149	47	22	12	3	1	2		1	1	1	239	1.77	0.23	0.23
2009	76	26	11	6	1							120	1.58	0.22	0.22
2010	91	37	13	11	2		1					155	1.71	0.24	0.24
2011	87	34	20	12		1						154	1.75	0.27	0.27
2012	72	43	28	4	2		1					150	1.83	0.31	0.31
2013	92	60	49	19	2	1	3					226	1.87	0.35	0.35
2014	97	62	38	18	4		1					220	1.97	0.34	0.34
2015	102	57	17	14	3	8					1	202	1.97	0.29	0.29
2016	65	44	29	16	4	1	1					160	2.11	0.37	0.37
2017	72	48	31	6		1						158	1.84	0.32	0.32
2018	88	54	44	20	17	6	3	2	3			237	2.32	0.41	0.41
2019	71	65	23	15	11	5	3	4	1			198	2.41	0.40	0.40
2020	47	42	33	8	9		1					140	2.24	0.41	0.41
2021	73	40	9	3	11	3						139	1.91	0.28	0.28
2022	61	50	30	12	3				1			157	2.05	0.37	0.37
2023	126	90	37	27	5	3	2		1	1		292	2.06	0.35	0.35
2024	99	90	42	20	11	6	2					270	2.18	0.40	0.40
2025	11	7	2		1							21	1.71	0.27	0.28
Total	1626	959	514	242	90	36	20	6	7	2	2	3504	2.00	0.33	0.33
%	46.4	27.37	14.67	6.91	2.57	1.03	0.57	0.17	0.19	0.06	0.06	100			

Chi-Square Test (CST) for Lotka's Law

Table 11 shows calculation for Lotka's Law using Chi-Square method. Lotka's Law using Chi-Square method can be expressed by the equation (Rathika *et al.*, 2020).

an=a1/ n2 (or *n*=1, 2, 3…)

CSM method follows every 100 authors making 1 paper each, 25 authors (100/ 2^2) contributing 2 papers each, approximately 11 authors (100/3^2 =11.11…) will have 3 publications each and so on.

Where, an=the number of authors contributing "n" papers each e. g.

a1=the number of authors contributing one paper each.

a2 =the number of authors contributing two papers each.

For the given dataset, the Degrees of freedom (D_f) for the chi-square test are calculated as:

D_f=N-1. Since the number of observed categories is *n*=28 (by counting serially from 1 to 73 in the first column of Table 11), the degrees of freedom=28-1=27. Referring to the chi-square critical value table (5% significance level) provided in *Research Methodology: Methods and Techniques* by Kothari, the critical value of χ^2 for 5 degrees of freedom is 40.113 (Kothari, 2004).

Table 5: **Subject wise authorship pattern, 1991-2025.**

Sl. No.	Subject	SGL	DBL	TRP	FR	FV	SX	SV	ET	NN	ELV	TLV	Total	%
1	Anatomy	38	19	5									62	
2	Biochemistry	15	10	5									30	
3	Dentistry	89	27	7	4		1						128	
4	Medicine	69	67	31	14	5	4			1			191	
5	Nursing	149	40	10	3	1							203	
6	Ophthamology	120	77	47	19	13	1	4	1	1	1	1	285	
7	Orthopaedics	81	54	27	10					1			173	
8	Otolayngology	38	35	21	4	2							100	
9	Paediatrics	84	71	31	16	9	1	1	1				214	
10	Pathology	54	36	7	3								100	
11	Hematology	37	25	19	9	4	4	2	1			1	102	
12	Biophysics	10	2	1	1								14	
13	Cardiology	86	41	20	7	1	4			1			160	
14	Anaesthesia	52	22	9	16	1	1						101	
15	Critical Care	17	6	15	19	5							62	
16	Biostatistcs & Research	22	10	4	2								38	
17	Alternative Medicine	346	195	84	51	24	11	5	2	1	1		720	
18	Obstertrics & Gynaecology	193	147	136	52	20	6	5	1	1			561	
19	Dermatology	78	64	35	12	4		3		1			197	
20	Community Health Nursing	22	2										24	
21	Community Medicine	26	9			1	3						39	
	Total	1626	959	514	242	90	36	20	6	7	2	2	3504	
	%	46.41	27.36	14.67	6.91	2.56	1.03	0.57	0.18	0.19	0.06	0.06	100	

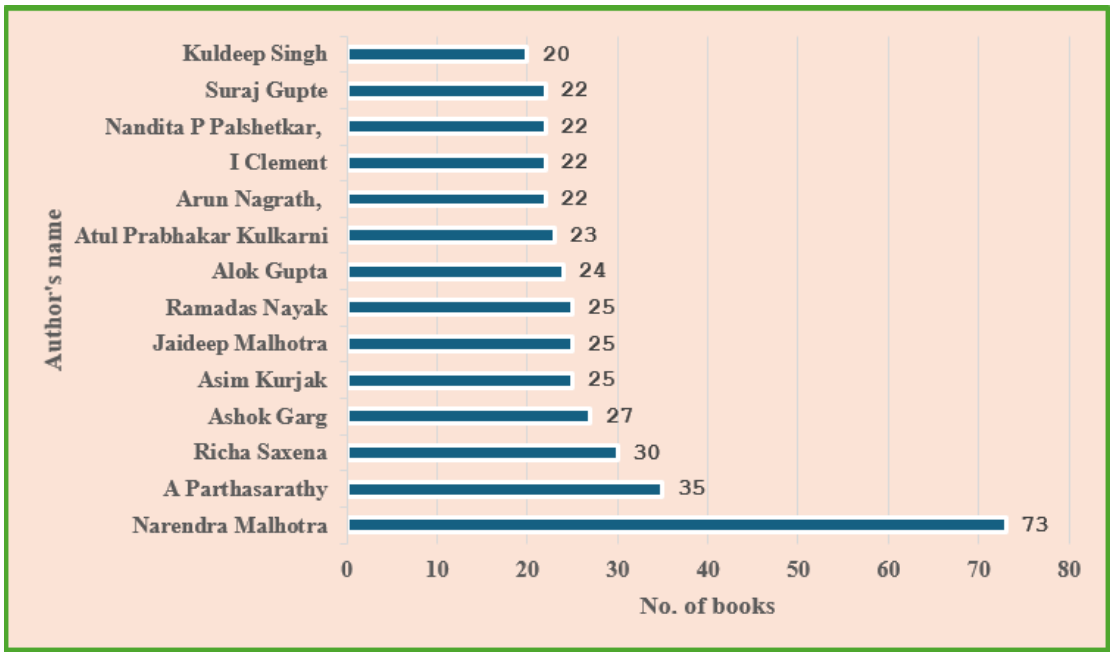

Figure 3: First 14 authors' book productions.

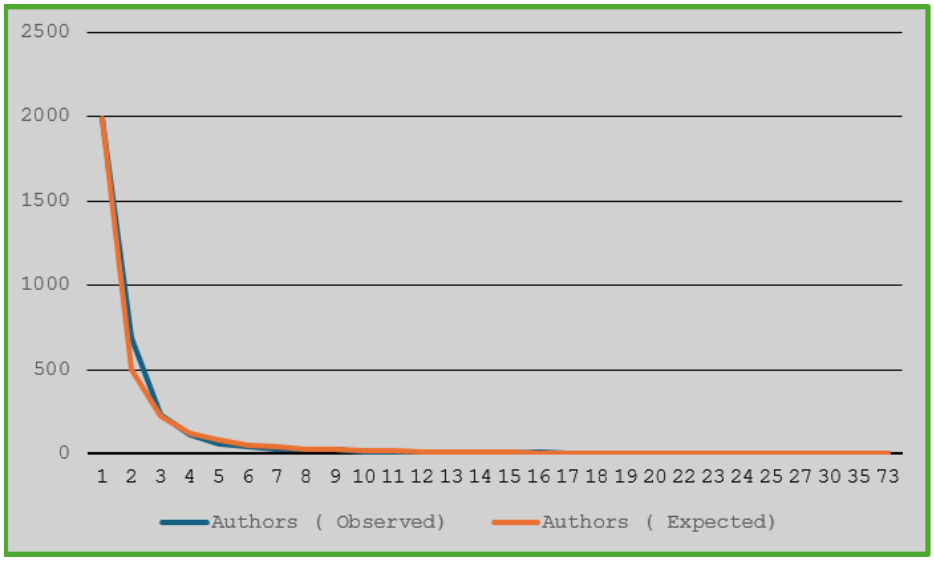

Figure 4: Relationship of observed and expected authorship pattern.

DISCUSSION

Overall, a total of 3,504 books were published during the period, of which 1,626 (46.4%) were single-authored and 1,878 (53.6%) were multi-authored, indicating a clear dominance of collaborative authorship with an overall DC of 0.54. In the initial years (1991-2002), book production was very low and sporadic, with negligible percentages and, in some years, complete dominance of either single or multi-authored works, resulting in extreme DC values (0.00 or 1.00). A gradual growth is visible from 2003 onwards, with steady increases in both types of authorship. Between 2003 and 2007, total output rose from 32 to 72 books, while the DC fluctuated around 0.39-0.53, suggesting a relatively balanced trend between individual and collaborative works. A major surge occurred in 2008, which recorded 239 books (6.83%), marking a significant expansion in publication activity. From 2008 to 2019, productivity remained consistently high, with notable peaks in 2013 (226 books), 2018 (237 books), and 2019 (198 books). During this period, multi-authored books increasingly outnumbered single-authored ones, reflected in higher DC values ranging from 0.52 to 0.64, highlighting the growing importance of collaboration. The highest DC values were observed in recent years, particularly in 2020 (0.66) and 2019 (0.64), indicating strong collaborative tendencies despite a temporary decline in total output during the pandemic period. The years 2023 and 2024 show the highest overall productivity, with 292 and 270 books respectively, and a strong dominance of multi-authored works, reinforcing the trend toward collaboration. Although 2025 shows a sharp decline due to partial-year data, the long-term pattern clearly demonstrates sustained growth in book production and an increasing preference for multi-authored scholarly works over time.

The year-wise Degree of Collaboration (Dc) reveals variations in collaborative research over the years. Complete collaboration (DC=1) was observed only in two years, 1991 and 2000, indicating occasional peaks of full joint authorship. A balanced level of collaboration (Dc=0.5) occurred in 2001 and 2006. Notably, higher collaboration levels (Dc > 0.5) were evident in 12 years, especially during recent periods, reflecting a growing inclination toward multi-authored research. In contrast, lower collaboration (Dc < 0.5) was also recorded in 12 years, particularly in earlier phases, suggesting that single-authored works were more prevalent during those times. Overall, the table indicates a progressive movement toward greater research collaboration over time.

Collaborative authorship as a whole is more prominent, as multi-authored books collectively constitute 53.59% of the total. Two-authored books represent a substantial portion with 959 titles (27.36%), followed by three-authored books with 514 titles (14.67%). Together, publications with up to three authors account for 88.44% of all books, demonstrating that collaboration in medical publishing is largely confined to small groups. Authorship involving four to five authors contributes a relatively modest share (9.47%), while books with six or more authors are rare, together accounting for just about 2.09% of the total output. The number of books decreases progressively as the number of authors increases: four-authored books constitute 6.91%, five-authored 2.56%, six-authored 1.03%, and contributions by seven or more authors are relatively rare, together accounting for less than 1% of the total. The cumulative percentage reaches 95.35% by four authors and nearly 100% by twelve authors, indicating a steep decline in frequency as the number of authors increases. Overall, the data suggest a strong preference for either single authorship or limited collaboration in medical book publishing, with large collaborative teams being uncommon.

Over the years, there is a clear trend of increasing collaboration. In the early years (1991-2002), most publications were

Table 6: Research Productivity.

Sl. No.	Name of authors	No. of Books	Ranks
1.	Narendra Malhotra	73	1st
2.	A Parthasarathy	35	2nd
3.	Richa Saxena	30	3rd
4.	Ashok Garg	27	4th
5.	Asim Kurjak	25	5th
6.	Jaideep Malhotra	25	5th
7.	Ramadas Nayak	25	5th
8.	Alok Gupta	24	6th
9.	Atul Prabhakar Kulkarni	23	7th
10.	Arun Nagrath,	22	8th
11.	I Clement	22	8th
12.	Nandita P Palshetkar,	22	8th
13.	Suraj Gupte	22	8th
14.	Kuldeep Singh	20	9th
15	Piyush Gupta	19	10th
16.	Anupama S Borker	18	11th
17.	BT Basavanthappa	18	11th
18.	Hiralal Konar	18	11th
19.	Kamini A Rao	18	11th
20.	Robert Thayer Sataloff,	18	11th
21.	Sonal Panchal	18	11th
22.	Yatin Mehta	18	11th
23.	Dhanya Dharmapalan	17	12th
24.	Jorge L Alio	17	12th
25.	Nitin Nema	17	12th
26.	Subhal Bhalchandra Dixit	17	12th
27.	Amar Agarwal	16	13th
28.	Archith Boloor	16	13th
29.	Dwarkadas K Baheti	16	13th
30.	HV Nema,	16	13th
31.	Jayakar Thomas	16	13th
32.	Rashmi Sarkar	16	13th
33.	SN Tripathy	16	13th
34.	Virendra N Seghal,	16	13th
35.	AH Suryakantha	15	14th
36.	Dilip Kumar Dutta	15	14th
37.	Mala Arora,	15	14th
38.	Navin C Nanda	15	14th
39.	Arun Kumar Paul	14	15th
40.	Chaitanya Nagor	14	15th
41.	Gautam N Allahbadia	14	15th
42.	Vivek Jain	14	15th

Sl. No.	Name of authors	No. of Books	Ranks
43.	Anupam Sachdeva	13	16th
44.	Parimalam Kumar	13	16th
45.	PSN Menon	13	16th
46.	Rohan Palshetkar	13	16th
47.	Shalini Rajaram,	13	16th
48.	Ajay Kumar Bhootra	12	17th
49.	Anjan Trikha	12	17th
50.	HK Chopra	12	17th
51.	Jaydeep Chaudhury,	12	17th
52.	Kanu Chatterjee	12	17th
53.	MKC Nair	12	17th
54.	Neerja Goel	12	17th
55.	Neharika Malhotra Bora	12	17th
56.	Rubina Merchant	12	17th
57.	Sanja Kupesic Plavsic	12	17th
58.	Atul Luthra	11	18th
59.	Bruno Lumbroso	11	18th
60.	Gautam Biswas	11	18th
61.	Gita Ganguly Mukherjee,	11	18th
62.	Kapil Zirpe	11	18th
63.	KC Mahapatra,	11	18th
64.	Manish R Pandya	11	18th
65.	Marco Rispoli	11	18th
66.	Sandipan Dhar	11	18th
67.	SK Giri,	11	18th
68.	Sudhir R Shah,	11	18th
69.	Sunita R Tandulwadkar	11	18th
70.	Suresh K Sharma	11	18th
71.	Alexander R Vaccaro	10	19th
72.	Bratati Banerjee	10	19th
73.	Deepak Govil	10	19th
74.	HP Pati	10	19th
75.	John Ebnezar	10	19th
76.	Namrata Sharma	10	19th
77.	Poonam Malhotra Kapoor	10	19th
78.	Sabaratnam Arulkumaran,	10	19th
79.	Vineet Nayyar	10	19th

single-authored or involved two authors, while from 2003 onwards, multi-authored works began to rise significantly. Peak collaboration is observed in years like 2018 (237 books) and 2023 (292 books), where the average number of authors per book (CI) reaches above 2.0, indicating higher collaborative activity. The Collaboration Coefficient (CC) and Mean Collaboration per Book (MCC) values fluctuate between 0.22 and 0.41, further reflecting a gradual shift towards multi-authorship in medical book publishing.

Overall, the table highlights that while single-authored books remain prominent, collaborative authorship has steadily increased over the years, demonstrating a growing trend of teamwork and co-authorship in medical research publications.

Table 7: Discipline wise authorship pattern.

Pattern of Disciplines	Authors	%
1	2417	73.35
2	665	20.18
3	158	4.79
4	45	1.36
5	08	0.25
6	02	0.07
	3295	100

The subject-wise authorship pattern of 3,504 medical books reveals clear variations in collaboration across different medical disciplines. Overall, single-authored books (46.41%) dominate most subjects, followed by double-authored (27.36%) and triple-authored (14.67%) works, while contributions involving four or more authors form a relatively smaller share. Alternative Medicine (720 books; 20.55%) and Obstetrics & Gynaecology (561 books; 16.01%) are the most productive subjects and show strong collaborative trends, with substantial numbers of double-, triple-, and higher-order multi-authored publications, indicating interdisciplinary and team-based practices. Subjects such as Ophthalmology (285 books), Paediatrics (214 books), Nursing (203 books), Dermatology (197 books), and Medicine (191 books) also demonstrate a balanced mix of single and multi-authored books, reflecting moderate to high collaboration. In contrast, basic and specialized subjects like Anatomy, Biochemistry, Biophysics, Community Health Nursing, and Community Medicine exhibit a stronger inclination toward single or double authorship, suggesting limited collaborative engagement. Highly clinical and practice-oriented areas such as Critical Care, Hematology, Cardiology, and Anaesthesia show greater participation of four or more authors, highlighting the need for collective expertise. Overall, the table indicates that while individual authorship remains prominent across medical subjects, collaboration increases significantly in applied, interdisciplinary, and clinically intensive fields, underscoring evolving research and publishing practices in medical sciences.

The research productivity of leading authors in medical book publishing highlights a highly skewed distribution in which a small group of prolific authors contributes a substantial number of publications. Narendra Malhotra ranks first with 73 books, far surpassing all others and demonstrating exceptional productivity. He is followed by A. Parthasarathy with 35 books and Richa Saxena with 30 books, indicating a sharp drop after the top-ranked author. The next tier of contributors includes authors such as Ashok Garg (27 books) and Asim Kurjak, Jaideep Malhotra, and Ramadas Nayak (25 books each), reflecting a cluster of highly productive scholars. A large middle group of authors has produced between 15 and 24 books, accounting for the majority of listed contributors and suggesting consistent but moderate research output. The lower end of the ranking comprises authors with 10-14 books, who still demonstrate significant scholarly engagement but comparatively lower productivity. The presence of multiple authors sharing the same ranks highlights close productivity levels among peers and indicates collaborative or parallel contributions across specialties. Overall, the table demonstrates that medical book publishing is driven by a core group of prolific authors, supported by a broad base of moderately productive contributors, reflecting both leadership concentration and healthy participation within the medical academic community.

A total of 3,295 authors contributed to the publications, with the single-discipline pattern overwhelmingly dominating at 2,417 authors (73.35%), indicating that most authors contributed within only one discipline. This reflects a strong tendency toward subject specialization in medical publishing. Authors associated with two disciplines account for 665 (20.18%), suggesting a moderate level of interdisciplinary engagement. Participation across three disciplines drops sharply to 158 authors (4.79%), while involvement in four disciplines is minimal at 45 authors (1.36%). Very few authors contributed across five (0.25%) or six disciplines (0.07%), highlighting that extensive cross-disciplinary authorship is rare. Overall, the data reveal that while interdisciplinary contributions do exist, medical research productivity is largely discipline-centric, with limited movement across multiple fields.

The presence of multitalented and highly productive authors who have contributed to two or more medical disciplines, each with 10 or more publications, reflecting strong interdisciplinary engagement in medical book publishing. The largest group consists of authors working across two disciplines, predominantly combinations involving Obstetrics & Gynaecology and Alternative Medicine, or Ophthalmology and Alternative Medicine, indicating that Alternative Medicine serves as a major interdisciplinary bridge. Notable contributors in this category include Asim Kurjak (25 books), Arun Nagrath (22 books), and Nandita P. Palshetkar (22 books). Authors spanning three disciplines demonstrate even higher scholarly impact, led by Narendra Malhotra, who stands out with an exceptional 73 publications, followed by A. Parthasarathy (35 books) and Jaideep Malhotra (25 books), showing that broader disciplinary engagement often coincides with higher productivity. A smaller but significant group of authors contributes across four disciplines, such as Ashok Garg (27 books) and Ramadas Nayak (25 books), reflecting advanced interdisciplinary expertise. Very few authors extend their work to five or six disciplines, yet they maintain substantial output, with Richa Saxena (30 books), Atul Prabhakar Kulkarni (23 books), and Yatin Mehta (18 books) exemplifying exceptional versatility. Overall, the table demonstrates that while most authors contribute within limited disciplinary boundaries, a select group of multitalented scholars plays a crucial role in driving interdisciplinary knowledge production, with Alternative Medicine emerging as the most common connecting discipline across multiple fields

Table 8: Multitalented authors with 10 & more than 10 publications.

Sl. No.	Multi-disciplines	Multitalented Minds	Papers
Authors belonged to Two- Disciplines			
1.	Obstertrics & Gynaecology, Alternative Medicine	Asim Kurjak, Arun Nagrath, Nandita P Palshetkar, SN Tripathy, Gautam N Allahbadia, Rohan Palshetkar, Shalini Rajaram, Neerja Goel, Neharika Malhotra Bora, Rubina Merchant, Gita Ganguly Mukherjee, KC Mahapatra, SK Giri, Sabaratnam Arulkumaran.	25, 22, 22, 16,14, 13, 13,12, 12, 12, 11, 11,11, 10
2.	Nursing, Community Health Nursing	I Clement	22
3.	Obstertrics & Gynaecology, Medicine	Sonal Panchal, Chaitanya Nagor	18, 14
4.	Ophthamology, Alternative Medicine	Nitin Nema, Amar Agarwal, HV Nema, Ajay Kumar Bhootra, Namrata Sharma	17, 16, 16, 12, 10
5.	Dermatology, Alternative Medicine	Virendra N Seghal	16
6.	Cardiology, Alternative Medicine	Kanu Chatterjee	12
7.	Orthopaedics, Alternative Medicine	Alexander R Vaccaro	10
8.	Critical Care, Alternative Medicine	Vineet Nayyar	10
Authors belonged to Three-Disciplines			
9.	Anaesthesia, Alternative Medicine, Obstertrics & Gynaecology	Narendra Malhotra, Jaideep Malhotra	73, 25
10.	Paediatrics, Hematology, Alternative Medicine	A Parthasarathy, Alok Gupta, Suraj Gupte, Anupama S Borker, Dhanya Dharmapalan, Anupam Sachdeva, PSN Menon, Jaydeep Chaudhury	35, 24, 22, 18, 17, 13, 13, 12.
11.	Cardiology, Alternative Medicine, Obstertrics & Gynaecology	Kuldeep Singh	20
12.	Obstertrics & Gynaecology, Alternative Medicine, Medicine	Kamini A Rao, Sunita R Tandulwadkar.	18, 11
13.	Otolayngology, Alternative Medicine, Paediatrics	Robert Thayer Sataloff,	18
14.	Ophthamology, Paediatrics, Alternative Medicine	Jorge L Alio	17
15.	Medicine, Dermatology, Paediatrics	Rashmi Sarkar, Sandipan Dhar	16, 11
16.	Medicine, Alternative Medicine, Community Medicine	AH Suryakantha	15
17.	Paediatrics, Alternative Medicine, Obstertrics & Gynaecology	Dilip Kumar Dutta	15
19.	Anaesthesia, Alternative Medicine, Critical Care	Anjan Trikha	12

Sl. No.	Multi-disciplines	Multitalented Minds	Papers
20.	Cardiology, Alternative Medicine, Medicine	HK Chopra	12
21.	Pathology, Obstertrics & Gynaecology, Nursing	Gautam Biswas	11
22.	Nursing, Cardiology, Obstertrics & Gynaecology	Sudhir R Shah,	11
23.	Nursing, Pathology, Biophysics	Suresh K Sharma	11
24.	Alternative Medicine, Critical Care, Hematology	Kapil Zirpe	11
25.	Hematology, Alternative Medicine, Pathology	HP Pati	10
26.	Orthopaedics, Alternative Medicine, Nursing	John Ebnezar	10
Authors belonged to Four- Disciplines			
27.	Ophthamology, Biophysics, Alternative Medicine, Paediatrics	Ashok Garg	27
28.	Pathology, Hematology, Alternative Medicine, Nursing	Ramadas Nayak	25
29.	Paediatrics, Biostatistcs & Research, Alternative Medicine, Hematology	Piyush Gupta	19
30.	Nursing, Biostatistcs & Research, Alternative Medicine, Community Health Nursing	BT Basavanthappa	18
31.	Medicine, Hematology, Critical Care, Alternative Medicine	Subhal Bhalchandra Dixit	17
32.	Dermatology, Alternative Medicine, Medicine, Paediatrics	Jayakar Thomas	16
33.	Medicine, Cardiology, Alternative Medicine, Medicine	Navin C Nanda	15
34.	Medicine, Alternative Medicine, Community Medicine, Hematology	Vivek Jain	14
35.	Medicine, Paediatrics, Dermatology, Alternative Medicine	Parimalam Kumar	13
36.	Paediatrics, Hematology, Alternative Medicine, Paediatrics	MKC Nair	12

Sl. No.	Multi-disciplines	Multitalented Minds	Papers
37.	Obstertrics & Gynaecology, Paediatrics, Alternative Medicine, Hematology	Sanja Kupesic Plavsic	12
38.	Cardiology, Obstertrics & Gynaecology, Alternative Medicine, Medicine	Manish R Pandya	11
39.	Medicine, Alternative Medicine, Community Medicine, Biostatistcs & Research	Bratati Banerjee	10
40.	Medicine, Critical Care, Hematology, Alternative Medicine	Deepak Govil	10
41.	Cardiology, Anaesthesia, Critical Care, Alternative Medicine	Poonam Malhotra Kapoor	10
Authors belonged to Five-Disciplines			
42.	Nursing, Ophthamology, Biophysics, Alternative Medicine, Obstertrics & Gynaecology	Richa Saxena	30
43.	Medicine, Hematology, Alternative Medicine, Anaesthesia, Critical Care	Atul Prabhakar Kulkarni	23
44.	Anaesthesia, Critical Care, Alternative Medicine, Obstertrics & Gynaecology, Paediatrics	Dwarkadas K Baheti	16
45.	Paediatrics, Anaesthesia, Critical Care, Alternative Medicine, Obstertrics & Gynaecology	Arun Kumar Paul	14
Authors belonged to Six- Disciplines			
46.	Pathology, Alternative Medicine, Hematology, Cardiology, Anaesthesia, Critical Care	Yatin Mehta	18
47.	Medicine, Nursing, Hematology, Cardiology, Alternative Medicine, Dentistry	Archith Boloor	16

Year-wise analysis of the Relative Growth Rate (ReGR) and Doubling Time (Dt) of medical book publications from 1991 to 2025, reveals distinct phases in the growth trajectory of scholarly output. In the initial phase (1991-1997), publication activity was negligible, with either one or no books published annually. Consequently, the cumulative total remained static and both ReGR and Dt values were zero, indicating no meaningful growth during this formative period. The first noticeable growth phase begins in 1998, when the cumulative total increased to four books, producing a relatively high ReGR of 0.74 and a short Dt of 0.50, signifying rapid early expansion from a very small base.

Between 1999 and 2002, growth remained irregular but gradually strengthened. The ReGR fluctuated between 0.23 and 1.27, while the Doubling Time dropped sharply in 2002 (Dt=0.54), reflecting accelerated expansion as publication activity began to stabilize. A

major growth surge occurred during 2003-2004, coinciding with a sharp rise in total output (32 and 43 books respectively). During this period, ReGR values exceeded 1.30, and Dt values remained close to 0.53-1.02, indicating a highly dynamic expansion phase. From 2005 to 2008, the growth rate moderated but remained positive. ReGR values declined gradually from 0.42 to 0.64, while Dt increased from 1.64 to 1.08, suggesting that although output was increasing substantially-especially in 2008 with 239 books-the pace of growth was becoming more stable rather

Table 9: Value of ReGR and Dt of books during 1991-2025.

Year	Total	Cumulative Total	$Log1_e$	$Log2_e$	ReGR	Mean ReGR	Dt = 0.69/ReGR	Mean Dt
1991	1	1	0	0	0	0	0	0
1992	0	1	0	0	0	0	0	0
1993	0	1	0	0	0	0	0	0
1994	0	1	0	0	0	0	0	0
1995	0	1	0	0	0	0	0	0
1996	0	1	0	0	0	0	0	0
1997	0	1	0	0	0	0	0	0
1998	3	4	0	1.38	1.38	0.74	0.50	1.09
1999	0	4	1.38	1.38	0.00		0.00	
2000	1	5	1.38	1.61	0.23		3.00	
2001	2	7	1.61	1.95	0.34		2.03	
2002	5	12	1.95	2.48	1.27		0.54	
2003	32	44	2.48	3.78	1.30		0.53	
2004	43	87	3.78	4.46	0.68		1.02	
2005	45	132	4.46	4.88	0.42	0.34	1.64	2.36
2006	62	194	4.88	5.26	0.38		1.82	
2007	72	266	5.26	5.58	0.32		2.16	
2008	239	505	5.58	6.22	0.64		1.08	
2009	120	625	6.22	6.43	0.21		3.29	
2010	155	780	6.43	6.65	0.22		3.14	
2011	154	934	6.65	6.83	0.18		3.38	
2012	150	1084	6.83	6.98	0.15	0.13	4.60	5.71
2013	226	1310	6.98	7.17	0.19		3.63	
2014	220	1530	7.17	7.33	0.16		4.32	
2015	202	1732	7.33	7.45	0.12		5.75	
2016	160	1892	7.45	7.54	0.09		7.67	
2017	158	2050	7.54	7.63	0.09		7.67	
2018	237	2287	7.63	7.74	0.11		6.27	
2019	198	2485	7.74	7.82	0.08	0.06	8.63	19.01
2020	140	2625	7.82	7.87	0.05		13.80	
2021	139	2764	7.87	7.93	0.06		11.50	
2022	157	2921	7.93	7.98	0.05		13.80	
2023	292	3213	7.98	8.07	0.09		7.67	
2024	270	3483	8.07	8.15	0.08		8.63	
2025	21	3504	8.15	8.16	0.01		69.00	
Total	3504							

Table 10: Application of Lotka's Law.

No of books by each author	Authors (Observed)	Authors (Expected)
1	1991	1991
2	691	498
3	235	221
4	112	125
5	60	79
6	44	55
7	31	41
8	27	31
9	25	24
10	9	20
11	13	16
12	10	13
13	5	11
14	4	10
15	4	8
16	8	7
17	4	6
18	7	6
19	1	5
20	1	4
22	4	4
23	1	3
24	1	3
25	3	3
27	1	2
30	1	2
35	1	1
73	1	0.37
	3295	3189+

than exponential. This period marks the transition from rapid expansion to consolidation.

The middle phase (2009-2014) shows a continued decline in ReGR (from 0.21 to 0.16) accompanied by a steady increase in Doubling Time (from 3.29 to 4.32). This inverse relationship reflects a maturing publication system, where output remains high but incremental growth slows as the cumulative base expands. Despite this, annual productivity stayed consistently strong, exceeding 120 books each year.

During 2015-2019, the ReGR dropped further to between 0.08 and 0.12, while Dt rose sharply, peaking at 8.63 in 2019. This indicates a mature and saturated growth stage, where increases in publication output contribute marginally to overall growth. The particularly high mean Dt (19.01) during this phase highlights a pronounced slowdown in relative growth, even though absolute production remained substantial.

The recent phase (2020-2024) reflects mixed dynamics. ReGR values reached their lowest levels (0.05-0.09), and Dt values became very high (ranging from 7.67 to 13.80), signifying slow relative growth likely influenced by external factors such as the pandemic. Nevertheless, absolute productivity rebounded strongly in 2023 (292 books) and 2024 (270 books), demonstrating resilience in the publication system despite low relative growth rates.

In 2025, the ReGR dropped to 0.01, with an exceptionally high Dt of 69.00, largely due to partial-year data rather than an actual collapse in productivity.

Overall, the mean ReGR shows a long-term declining trend, while mean Dt consistently increases, confirming that medical book publishing has transitioned from an early rapid growth phase to a mature, stable phase. The inverse relationship between ReGR and Dt throughout the period underscores the natural evolution of scholarly publishing, characterized by initial acceleration, followed by consolidation and sustained high-volume output.

The distribution of medical book authors according to the number of books has prepared a comparison statement between observed and expected values based on a theoretical model. The largest group consists of single-book authors, with 1,991 observed, indicating that most contributors publish only once. As the number of books per author increases, the number of authors decreases, reflecting a typical skewed distribution; for example, 691 authors published two books and 235 published three. Very few authors are highly prolific, such as the single author who published 73 books, far exceeding the expected 0.37, highlighting the dominance of a small group in total output. Observed values for lower publication counts (1-5 books) are generally close to expected values, while higher-output authors show significant deviations from the theoretical model. The inverse relationship closely aligns with the expected values predicted by Lotka's Law, particularly for authors producing between two and ten books. Minor deviations are observed at higher productivity levels, where a small number of highly prolific authors produced 25 or more books, including one author with as many as 73 books. Overall, the close correspondence between observed (3,295) and expected (approximately 3,189) author counts indicates that the productivity pattern of medical book authors generally conforms to Lotka's inverse square law, confirming its applicability to this field.

The chi-square test was applied to examine the goodness of fit of the observed authorship productivity data with Lotka's Law. The table compares the observed number of authors and their expected frequencies across different levels of productivity.

Table 11: Calculation for Lotka's Law using Chi-Square method.

Paper by each author (X)	No. of Authors (Y)				[Y(O)-Y(E)] =A	$(A)^2$	Chi-square x^2 = $\Sigma[(A)^2/ Y (E)]$
	Observed (O)		Expected (E)				
	Authors Y(O)	Observed Percentage = [Y(O)/1991] x100	Authors Y(E) = 1991/ n^2 & n=X	Expected Percentage = [Y (E)/1991] x 100 Or 100/ n^2 [n =X]			
1	1991	100.00	1991	100.00	000	0	0
2	691	34.71	498	25.01	193	37249	74.79
3	235	11.80	221	11.09	14	196	0.88
4	112	5.63	125	6.27	-13	169	1.35
5	60	3.01	79	3.96	-19	361	4.56
6	44	2.21	55	2.76	-11	121	2.20
7	31	1.56	41	2.05	-10	100	2.43
8	27	1.36	31	1.56	-4	16	0.52
9	25	1.26	24	1.21	1	1	3.20.04
10	9	0.45	20	1.01	-11	121	6.05
11	13	0.65	16	0.80	-3	9	0.56
12	10	0.51	13	0.65	-3	9	0.69
13	5	0.25	11	0.55	-6	36	3.27
14	4	0.20	10	0.51	-6	36	3.60
15	4	0.20	8	0.40	-4	16	2.00
16	8	0.40	7	0.35	1	1	0.14
17	4	0.20	6	0.30	-2	4	0.67
18	7	0.35	6	0.30	1	1	0.17
19	1	0.00	5	0.25	-4	16	3.20
20	1	0.00	4	0.20	-3	9	2.25
22	4	0.20	4	0.20	0	0	0
23	1	0.00	3	0.15	-2	4	1.34
24	1	0.00	3	0.15	-2	4	1.34
25	3	0.01	3	0.15	0	0	0
27	1	0.00	2	0.10	-1	1	0.50
30	1	0.00	2	0.10	-1	1	0.50
35	1	0.00	1	0.05	0	0	0
73	1	0.00	0.37	0.00	0.63	0.39	1.05
N =28	3295					Chi-Square (X^2)	114.06

So, Chi-square (X^2)=Σ [A/ Y (E)]=114.06.

While single-book authors exactly matched the expected value, noticeable deviations were observed for authors producing two or more books, particularly in the lower and middle productivity ranges (2-10 books), where observed values were often higher or lower than expected. The calculated chi-square value (114.06) is higher than the critical value (40.113), and hence, the difference

between the observed and expected distributions is statistically significant at the 5% level. This suggests that the authorship pattern of medical book publications does not strictly conform to Lotka's Law. Although the general trend still reflects Lotka's principle-where a large proportion of authors produce few books and a very small number of authors are highly prolific-the statistical test confirms that the deviations are large enough to reject a perfect fit to the law. Overall, the findings indicate partial conformity in trend but not in statistical exactness.

CONCLUSION

The comprehensive analysis of all the tables collectively presents a clear and coherent picture of the growth, authorship pattern, collaboration trends, disciplinary spread, and research productivity in medical book publishing during 1991-2025. Overall, the findings indicate a substantial expansion of scholarly output, accompanied by a gradual shift from individual authorship toward collaborative and interdisciplinary practices.

The year-wise analysis shows that medical book publication experienced slow and sporadic growth in the early years (1991-2002), followed by a rapid expansion phase (2003-2008) and eventually progressed into a mature and stable phase after 2009. This maturity is reflected in declining Relative Growth Rates (ReGR) and increasing Doubling Time (Dt), even though absolute publication output remained consistently high in later years, especially during peak periods such as 2008, 2013, 2018, 2023, and 2024. This trend confirms the natural evolution of a scholarly publishing system from emergence to consolidation.

Authorship pattern analysis reveals that while single-authored books (46.41%) remain significant, multi-authored works (53.59%) dominate overall, with a clear preference for small collaborative groups of two to three authors. Higher levels of collaboration are increasingly visible in recent years, as indicated by rising Degree of Collaboration (DC), Collaboration Index (CI), and Collaborative Coefficient (CC). These metrics collectively demonstrate a steady strengthening of collaborative research culture in medical sciences.

Subject-wise and discipline-wise analyses highlight marked variations in collaboration intensity. Clinically oriented and interdisciplinary fields such as Alternative Medicine, Obstetrics & Gynaecology, Ophthalmology, Paediatrics, and Medicine show higher levels of multi-authorship, whereas foundational disciplines like Anatomy, Biochemistry, Biophysics, and Community-based subjects remain largely dominated by single or double authorship. The dominance of single-discipline authors (73.35%) further indicates that specialization remains central, though a meaningful share of authors contribute across multiple disciplines.

The identification of highly productive and multitalented authors underscores the presence of a core group of scholars who significantly drive medical book publishing. A small number of prolific authors-most notably Narendra Malhotra-account for a disproportionately large share of output, confirming the applicability of productivity concentration patterns. Multidisciplinary authorship, especially involving Alternative Medicine, emerges as a key force in bridging diverse medical domains.

The application of Lotka's Law indicates that while the general productivity pattern follows the expected inverse relationship between the number of authors and publications, the chi-square test confirms significant deviations, implying that the distribution does not strictly conform to the law. Overall, the study highlights the dynamic evolution of medical book publishing, characterized by increasing collaboration, subject expansion, interdisciplinary contributions, and the dominance of a few highly productive authors, reflecting both growth and maturation of medical knowledge production over time.

In summary, the collective evidence demonstrates that medical book publishing over the studied period is characterized by robust growth, increasing collaboration, strong disciplinary foundations, and selective interdisciplinary expansion. The field has transitioned into a mature stage marked by sustained productivity, collaborative knowledge creation, and the influential role of prolific and multitalented authors, reflecting the evolving demands of modern medical research and education.

Suggestions

Based on the analysis of the tables covering year-wise productivity, authorship patterns, collaboration trends, disciplinary spread, and research productivity, several strategic suggestions can be made to enhance the quality, impact, and diversity of medical book publishing:

Encourage Collaborative Authorship

Although multi-authored books dominate (53.59%), the data shows that most collaborations are limited to two or three authors. Promoting larger collaborative teams-especially for complex interdisciplinary topics-can enhance the depth, diversity, and credibility of publications.

Institutional incentives could be introduced for collaborative projects spanning multiple disciplines.

Foster Interdisciplinary Research

The majority of authors are single-discipline (73.35%), indicating room for increased cross-disciplinary work. Encouraging collaboration between clinical, research, and alternative medicine fields can produce more integrative and impactful books.

Multitalented authors show high productivity; programs to mentor and train authors in multiple disciplines can amplify their contribution and innovation.

Support Emerging Authors

A small group of authors contributes disproportionately to output. To broaden the authorship base, workshops, writing programs, and mentorship for early-career researchers can help diversify contributors and reduce over-reliance on a few prolific authors.

Sustain Growth While Improving Quality

The Relative Growth Rate (ReGR) is declining while Doubling Time (Dt) is increasing, indicating mature but stable growth. To maintain momentum, publishers should focus on quality, relevance, and updates in medical books rather than sheer quantity.

Incorporating modern trends such as digital books, open-access, and evidence-based updates can ensure wider reach and utility.

Promote Underrepresented Disciplines

Certain fields like Biophysics, Community Health Nursing, and Biostatistics & Research have minimal publications. Strategic initiatives-grants, conferences, or collaborative projects-can encourage authors to publish in these underrepresented areas.

Leverage Data on High-Impact Authors

Identifying multitalented and highly productive authors can help in forming editorial boards, advisory panels, and collaborative projects, which can enhance both quality and interdisciplinary coverage.

Monitor Trends in Collaboration and Output

Continuous analysis of ReGR, DC, CI, and CC should be conducted to track changes in collaborative patterns and identify areas of stagnation or high growth. Data-driven strategies can help optimize future research and publishing policies.

Encourage Multi-Disciplinary Book Series

Given the high productivity of authors across multiple disciplines, publishers could focus on thematic series covering multiple medical domains, which can attract diverse readership and increase citation impact.

In essence, the data suggests that the medical book publishing ecosystem is mature and productive, but there is substantial scope to enhance collaboration, interdisciplinarity, and inclusivity while maintaining high quality and relevance. Implementing these strategies can strengthen both the scholarly impact and educational value of medical literature.

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ABBREVIATIONS

DC: Degree of Collaboration; **MS Word:** Microsoft Word; **MS Excel:** Microsoft Excel; **SGL:** Single-authored paper; **DBL:** Double-authored paper; **TRP:** Triple-authored paper; **FR:** Four-authored paper; **FV:** Five-authored paper; **SX:** Six-authored paper; **SV:** Seven-authored paper; **ET:** Eight-authored paper; **NN:** Nine-authored paper; **ELV:** Eleven-authored paper; **TLV:** Twelve-authored paper; **CC:** Collaboration Coefficient; **CI:** Collaboration Index; **MCC:** Modified Collaboration Coefficient; **ReGR:** Relative Growth Rate; **Dt:** Doubling Time; **Y(O):** Number of authors (Observed); **Y(E):** Number of authors (Expected); **P-P Model:** Public-Private Model.

CONFLICT OF INTEREST

The authors declare that there is no conflict of Interest.

AUTHOR CONTRIBUTIONS

Dr. Koley contributed the conceptual framework, planned the work, and refined the manuscript by drafting the introduction, making necessary revisions, additions, and modifications, and formulating the final conclusions. Mrs. Thakur was responsible for data collection, organization, tabulation, and the initial drafting of the article under Koley's guidance and supervision.

SUMMARY

This bibliometric study analyzes medical book productivity in India during 1991-2025, based on 3,504 medical books collected mainly from the Jaypee Digital-Explore Health Science database. The results show a clear growth pattern, with sporadic publication activity during 1991-2002 followed by a stable and mature phase after 2009. The Relative Growth Rate (ReGR) reached its maximum value of 1.30 in 2003 and gradually declined thereafter, while the Doubling Time (Dt) increased steadily, reaching 69 years by 2025, indicating saturation in growth. Authorship analysis reveals that multi-authored books dominated the output, accounting for 53.59% of total publications, with a strong preference for small collaborative groups. A core group of prolific authors contributed disproportionately, led by Narendra Malhotra with 73 books, while 73.35% of authors published within a single discipline. The application of Lotka's Law confirmed an inverse relationship between authors and productivity, though chi-square testing showed significant deviations from the theoretical distribution. Overall, the statistical evidence confirms that a relatively small number of multitalented authors drive the majority of medical book publishing in India.

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