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**Original** Article

# Pediatric surgical research over the last decade: A bibliometric citation analysis

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## ABSTRACT

Objectives: A way of identifying significant works from a plethora of published material is by a bibliometric analysis. The citation count of a particular article indicates its influence within the readership. A survey of the top 10 articles (in terms of citations per year) in pediatric surgery from each of the three leading international journals (Journal of Pediatric Surgery [JPS], European Journal of Pediatric Surgery [EurJPS], and Pediatric Surgery International [PSI]) and the foremost Indian journal (Journal of Indian Association of Pediatric Surgeons [JIAPS]) should give an insight into the research that has been quoted the most in the last decade. Through an extensive literature search, this paper aims to identify, analyse and categorize the characteristics of the most cited papers in pediatric surgery in the last decade, worldwide and in India.

Material and Methods: The number of citations of all articles from 4 journals (JPS, EurJPS, PSI, JIAPS) published between January 2013 and May 2022 were sorted using the "Publish or Perish®" software (version 8). The top 10 articles in each journal (by citations per year) published between January 2013 and May 2022 were then tabulated into a Microsoft Excel<sup>®</sup> sheet and details including the topic studied, citations per year, year of publication and type of study were noted.

Results: Out of the 40 articles, there were 13 review articles and 27 original articles - 12 retrospective reviews, 6 consensus papers, 6 surveys and 3 animal research studies. 15 of these articles were from the United States of America (USA), 12 were from Europe and 3 were global, spanning continents. Among the top 10 cited papers from JIAPS, 8 were from India. The most commonly covered topics were esophageal atresia, necrotizing enterocolitis, acute appendicitis and Hirschsprung's disease.

Conclusion: The most influential manuscripts relate to common neonatal surgical conditions and appendicitis. This information should be of value to upcoming pediatric surgeons to choose their prospective research and create a long-lasting impact on the field of pediatric surgery. For the editorial team, it provides an insight into the kind of articles that are of interest to pediatric surgeons.

Keywords: Pediatric surgery, Pediatric surgical research, Citation, Bibliometry

## **INTRODUCTION**

The current age pediatric surgeon is faced with a deluge of printed and electronic information. Around 20-25 medical journals (in English language) dedicated solely to research in pediatric surgery are currently published around the world. Besides these, there are printed articles available from national and international conferences, various training courses, and CMEs.

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Journals in non-English languages are also available with English translations. It would be interesting to know what does a pediatric surgeon read which would not only provide an insight into the type of manuscripts widely accessed but also will enable editorial teams in selection of informative articles preferred by the pediatric surgery readership.

With the vast volume of published material, one of the several methods of identifying significant works is by a bibliometric analysis, i.e., providing a quantitative assessment of the relative importance of a research paper by examining its citation history. Bibliometric analysis can be utilized for a variety of reasons, such as to uncover emerging trends in article and journal performance, collaboration patterns and research constituents. The citation count, amongst these, of a particular article is one of the indicators of its influence within the readership. Citation analysis also serves to rank journals based on the total number of citations normalized to the number of articles published within the journal over a defined time period (impact factor [IF]).<sup>[1]</sup>

Although most journals quote their calculated IF, citation half-life, and other parameters, no information exists whatsoever about what was mostly read and how much. The websites of a few journals do have the statistics of the most cited articles, but on scrutiny, they are found to underestimate the number of citations by a considerable margin when compared with the most accessible database, i.e., "Google Scholar."

It may be safely assumed that readers prefer journals ranking highly on the IF list and that those who are actively publishing are the ones who read these journals the most. Hence, a survey of the top 10 articles (in terms of citations per year) in pediatric surgery from 3 top international journals (Journal of Pediatric Surgery [JPS]; IF = 2.545, European Journal of Pediatric Surgery [EurJPS]; IF = 2.191, and Pediatric Surgery International [PSI]; IF = 1.827) and the foremost Indian journal (Journal of Indian Association of Pediatric Surgeons [JIAPS]; IF = 0.543) was done so as to know the scientific article that has been read and quoted the most in the last decade.

This study aims to identify, analyse and categorise the characteristics (the type of article, country of origin, topic, and the number of citations) of the articles published in JPS, EurJPS, PSI and JIAPS from January 2013 to May 2022. This study also aims to highlight as to what articles do the pediatric surgeons read and what is their focus of research.

## MATERIAL AND METHODS

The number of citations of all articles published between January 2013 and May 2022 were obtained from three databases: "CrossRef," "MEDLINE," "Thomson Reuters Web of Science" and "Google Scholar" using A.W. Harzing's "Publish or Perish" software (version 8). The entire data was collected over 24 h and the final tally was obtained by adding all the citations in the three databases after removing common entries.

The top 10 articles (as per citations per year) from each of the 4 journals (JPS, EurJPS, PSI, JIAPS) published between January 2013 and May 2022 were tabulated into a Microsoft Excel<sup>\*</sup> sheet. The type of article, authorship, journal of publication, publication year, country of origin, topic, total citations and number of citations per year were noted. The articles were then sorted based on the citations per year.

## RESULTS

The total number of scientific articles, in the four journals, published between January 2013 to May 2022, was 7078. Out of which, 4098 (57.9%) were original articles, 1476 (20.85%) were case reports, 874 (12.35%) brief communications and 630 (8.9%) were review articles [Figure 1].

The top 10 articles, based on citations per year, in each of the 4 journals, published between January 2013 and May 2022 are shown in [Table 1]. These articles garnered a total of 3028 citations (18.7 citations per article per year) until May 2022.

Out of the 40 articles, there were 13 review articles and 27 original articles – 12 retrospective reviews, 6 consensus papers, 6 surveys and 3 animal research studies [Figure 2].

15 of these articles were from the United States of America (USA), 4 from Canada, 2 from Spain and 1 each from Italy, Ireland, Germany and Japan. Of the multi-institutional articles, 7 were from Europe and 3 were global, spanning continents (one had Asian authorship while two were from African institutions in collaboration with American and European centres).

In the Indian journal JIAPS, amongst the top 10 cited papers, 8 were from India, 1 from Italy and one multi-institutional review article with authors from Malawi, Poland, Switzerland, Italy and the United Kingdom [Table 1].



**Figure 1:** Distribution of articles published between 2013 and 2022 in the top pediatric journals.

Der	Table 1: Top ten cited articles from each of JPS, EurJPS, PSI, JIAPS ranked by citations per year.											
No.         No. <td>Rank</td> <td>Cites per vear</td> <td>Journal</td> <td>Authors</td> <td>Title</td> <td>Year</td> <td>Type of Study</td> <td>No of patients</td> <td>Country</td> <td>Total citations</td> <td>ArticleURL</td> <td></td>	Rank	Cites per vear	Journal	Authors	Title	Year	Type of Study	No of patients	Country	Total citations	ArticleURL	
No.         No. <td>1</td> <td>51</td> <td>JPS</td> <td>CD Gerall, JR DeFazio, AM Kahan, et al</td> <td>Delayed presentation and sub-optimal outcomes of pediatric patients with acute appendicitis during the COVID-19 pandemic</td> <td>2021</td> <td>Retrospective review</td> <td>89</td> <td>USA</td> <td>51</td> <td>https://www.sciencedirect.com/science/article/p ii/S0022346820307569</td> <td></td>	1	51	JPS	CD Gerall, JR DeFazio, AM Kahan, et al	Delayed presentation and sub-optimal outcomes of pediatric patients with acute appendicitis during the COVID-19 pandemic	2021	Retrospective review	89	USA	51	https://www.sciencedirect.com/science/article/p ii/S0022346820307569	
i       No.       No	2	47	JPS	CL Kvasnovsky, Y Shi, BS Rich, et al	Limiting hospital resources for acute appendicitis in children: lessons learned from the US epicenter of the COVID-19 pandemic	2021	Retrospective review	55	USA	47	https://www.sciencedirect.com/science/article/p ii/S0022346820304449	
1     1     1     1     1     1     1     1     1     1     1     1     1     1     1       1 </td <td>3</td> <td>38.83</td> <td>JPS</td> <td>R Langer, J Vacanti</td> <td>Advances in tissue engineering</td> <td>2016</td> <td>Review article</td> <td></td> <td>USA</td> <td>233</td> <td>https://www.sciencedirect.com/science/article/p ii/S0022346815006314</td> <td></td>	3	38.83	JPS	R Langer, J Vacanti	Advances in tissue engineering	2016	Review article		USA	233	https://www.sciencedirect.com/science/article/p ii/S0022346815006314	
1         2         1         2         1         1         2         1	4	31.8	EurJPS	P Triana, M Dore, VN Cerezo, et al	Sirolimus in the treatment of vascular anomalies	2017	Retrospective review	41	Spain	159	https://www.thieme- connect.com/products/ejournals/html/10.1055/s-	
No.         No. <td>5</td> <td>28</td> <td>JPS</td> <td>A Hock, H Miyake, B Li, et</td> <td>Breast milk-derived exosomes promote intestinal</td> <td>2017</td> <td>Animal research</td> <td></td> <td>Canada</td> <td>140</td> <td>https://www.sciencedirect.com/science/article/p ii/S0022346817300659</td> <td></td>	5	28	JPS	A Hock, H Miyake, B Li, et	Breast milk-derived exosomes promote intestinal	2017	Animal research		Canada	140	https://www.sciencedirect.com/science/article/p ii/S0022346817300659	
No.         No. <td>6</td> <td>26.33</td> <td>JPS</td> <td>HD Baumgarten, AJ Bauer, A Isaza, et al</td> <td>Surgical management of pediatric thyroid disease: Complication rates after thyroidectomy at the Children's Hospital of Philadelphia high-volume Pediatric Thyroid</td> <td>2019</td> <td>Retrospective review</td> <td>464</td> <td>USA</td> <td>79</td> <td>https://www.sciencedirect.com/science/article/p ii/S0022346819301228</td> <td></td>	6	26.33	JPS	HD Baumgarten, AJ Bauer, A Isaza, et al	Surgical management of pediatric thyroid disease: Complication rates after thyroidectomy at the Children's Hospital of Philadelphia high-volume Pediatric Thyroid	2019	Retrospective review	464	USA	79	https://www.sciencedirect.com/science/article/p ii/S0022346819301228	
1         2	7	26.33	JPS	EA Newman, S Abdessalam, JH Aldrink, et al	Update on neuroblastoma	2019	Review article	-	USA	79	https://www.sciencedirect.com/science/article/p ii/S0022346818305748	
No.         No. <td>8</td> <td>25</td> <td>JPS</td> <td>JD Horton, S Munawar, C Corrigan, et al</td> <td>Inconsistent and excessive opioid prescribing after common pediatric surgical operations</td> <td>2019</td> <td>Retrospective review</td> <td>470</td> <td>USA</td> <td>75</td> <td>https://www.sciencedirect.com/science/article/p ii/S0022346818304317</td> <td></td>	8	25	JPS	JD Horton, S Munawar, C Corrigan, et al	Inconsistent and excessive opioid prescribing after common pediatric surgical operations	2019	Retrospective review	470	USA	75	https://www.sciencedirect.com/science/article/p ii/S0022346818304317	
No.         No. <td>9</td> <td>24.6</td> <td>PSI</td> <td>A Gosain, PK Frykman, RA Cowles, et al</td> <td>Guidelines for the diagnosis and management of Hirschsprung-associated enterocolitis</td> <td>2017</td> <td>Consensus</td> <td></td> <td>USA</td> <td>123</td> <td>https://link.springer.com/article/10.1007/s00383- 017-4065-8</td> <td></td>	9	24.6	PSI	A Gosain, PK Frykman, RA Cowles, et al	Guidelines for the diagnosis and management of Hirschsprung-associated enterocolitis	2017	Consensus		USA	123	https://link.springer.com/article/10.1007/s00383- 017-4065-8	
11     10     10     10     10     10     100	10	24.2	JPS	DR Lal, SK Gadepalli, CD Downard, et al	Perioperative management and outcomes of esophageal atresia and tracheoesophageal fistula	2017	Retrospective review (Multi-institutional)	396	USA	121	https://www.sciencedirect.com/science/article/p ii/S0022346816305978	
12         12.1         13.2         13.4         14.1         1	11	23.4	PSI	RM Rentea, SDS Peter, CL Snyder	Pediatric appendicitis: state of the art review	2017	Review article		USA	117	https://link.springer.com/article/10.1007/s00383- 016-3990-2	
No.         No. <td>12</td> <td>23.25</td> <td>JPS</td> <td>HL Short, KF Heiss, K Burch, et al</td> <td>Implementation of an enhanced recovery protocol in pediatric colorectal surgery</td> <td>2018</td> <td>Retrospective review (Comparative)</td> <td>79</td> <td>USA</td> <td>93</td> <td>https://www.sciencedirect.com/science/article/p ii/S0022346817302695</td> <td></td>	12	23.25	JPS	HL Short, KF Heiss, K Burch, et al	Implementation of an enhanced recovery protocol in pediatric colorectal surgery	2018	Retrospective review (Comparative)	79	USA	93	https://www.sciencedirect.com/science/article/p ii/S0022346817302695	
i         i	13	22.5	JPS	C Pisano, J Galley, M Elbahrawy, et al	Human breast milk-derived extracellular vesicles in the protection against experimental necrotizing enterocolitis	2020	Animal research		USA	45	https://www.sciencedirect.com/science/article/p ii/S0022346819307055	
3         30         40         400	14	22	PSI	G Lakshin, S Banek, D Keese, et al	Telemedicine in the pediatric surgery in Germany during the COVID-19 pandemic	2021	Survey		Germany	22	https://link.springer.com/article/10.1007/s00383- 020-04822-w	
i         i         image         image </td <td>15</td> <td>20.5</td> <td>PSI</td> <td>H Miyake, C Lee, S Chusilp, et al</td> <td>Human breast milk exosomes attenuate intestinal damage</td> <td>2020</td> <td>Animal research</td> <td>-</td> <td>Global</td> <td>41</td> <td>https://link.springer.com/article/10.1007/s00383- 019-04599-7</td> <td></td>	15	20.5	PSI	H Miyake, C Lee, S Chusilp, et al	Human breast milk exosomes attenuate intestinal damage	2020	Animal research	-	Global	41	https://link.springer.com/article/10.1007/s00383- 019-04599-7	
1         1         1         1         1         1         0	16	18.2	PSI	M Nio	Japanese biliary atresia registry	2017	Survey		Japan	91	https://link.springer.com/article/10.1007/s00383- 017-4160-x	
i         i         i         i         i         i         U	17	18.2	PSI	JC Langer, MD Rollins, M Levitt, et al	Guidelines for the management of postoperative obstructive symptoms in children with Hirschsprung disease	2017	Consensus		Canada, USA	91	https://link.springer.com/article/10.1007/s00383 017-4066-7	
1         1	18	17.8	PSI	KC Soares, SD Goldstein, MA Ghaseb, et al	Pediatric choledochal cysts: diagnosis and current management	2017	Review article	•	USA	89	https://link.springer.com/article/10.1007/s00383- 017-4083-6	
12         11.01         Action Matrix         1100000000000000000000000000000000000	19	17	EurJPS	C Dingemann, S Eaton, G Aksnes, et al	ERNICA consensus conference on the management of patients with long-gap esophageal atresia: perioperative, surgical, and long-term management	2021	Consensus		Europe	17	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0040-1713932	
1         1         1         1         1         1         1         0	20	16.75	EurJPS	A Zani, S Eaton, ME Hoellwarth, et al	International survey on the management of esophageal atresia	2014	Survey		Europe	134	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0033-1350058	
12         13.3         Met         Status, Takos, Lakus, Valorati, Rest         Termination freest decision decisis decisis decision decision decision decision decisis decision	21	16.25	EurJPS	LF Goodman, E St-Louis, Y Yousef, et al	The global initiative for children's surgery: optimal resources for improving care	2018	Consensus		Global	65	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0037-1604399	
12         15.2         96         Kin, Modern, Ma         Pathogenesis de neural according entercoulis         2015         Review article         -         USA         107         Nter//mk.approgr.com/nticle/10.0700033           24         14.22         96         Remembric of falaments, falaments, falaments, falamenta according entercoulis:         2013         Review article         -         USA         128         Nter//mk.approgr.com/nticle/10.0700033           25         17.01         0rgs         Compact al again paramets hermica corrett         2013         Review article         -         USA         128         Nter//mk.approgr.com/nticle/10.0700033           26         17.01         urgs         Zain (A Staton, P Mur, d)         Compact al again paramets hermica corrett         2013         Survey         1.01         Europe         26         Nter//mk.approgr.com/ntei/d/10.055/n           27         13.01         durds         Compact and paramets as farming harmange and concoling         2013         Survey         1.01         Europe         26         Nter//mk.approgr.com/ntei/d/10.055/n           28         13.01         Compact and paramets as farming harmange and concoling an	22	15.33	JIAPS	SK Ratan, T Anand, J Ratan	Formulation of research question–Stepwise approach	2019	Review article		India	46	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC 6322175/	
24         14.2         ps         R Derrecht, if Halawenh, Rodicerar, etc.         Hitter, fluggesein, transmitt and genoment to long etern followung.         No.         Review article         U.S.         U.S.         Log.         http://lwk.upringer.com/article/J0.007/00038 000-04835.           25         14.4         Ps         Etsrip, R.Kuiger         Competial diagnersity transmit and approximation and transmit and exproximation transmit strategies from analgement of necessiting etern coloru-up         201         Review article         .         reland, Canada         208         https://lwk.upringer.com/article/J0.007/00038 000-04835.           28         11.35         fuurs         Allan, S Eaton, P.Pu.et and Competing etern coloru-up         201         Sourcey         .         Europe         206         Contentions           28         11.35         fuurs         Cologenan, S Eaton, S         Encodenant analysis on the masagement of patients with esphaged atricis and connect com/product/journal/hmill/10.10559 0051 109316         Europe         20         India         Mttp://www.thime- connect.com/product/journal/hmill/10.10559 0051 109316           29         11.3         Jurs         Cologenant, S Eaton, Et and Source         Competinic at Source         201         Review article         .         India         Spain         Mttp://www.thime- connect.com/product/journal/hmill/10.10559 0051 109316         .           20 <td>23</td> <td>15.29</td> <td>PSI</td> <td>JC Lim, JM Golden, HR Ford</td> <td>Pathogenesis of neonatal necrotizing enterocolitis</td> <td>2015</td> <td>Review article</td> <td></td> <td>USA</td> <td>107</td> <td>https://link.springer.com/article/10.1007/s00383- 015-3697-9</td> <td></td>	23	15.29	PSI	JC Lim, JM Golden, HR Ford	Pathogenesis of neonatal necrotizing enterocolitis	2015	Review article		USA	107	https://link.springer.com/article/10.1007/s00383- 015-3697-9	
25     14     P3     Existy, Regirer     Compending induction formal control     200     Review article     1     reland, Causad     20     Integr//mix-field inclusion/particle inclusion/partincle inclusion/particle inclusion/particle inclusion/par	24	14.22	PSI	FR Demehri, IF Halaweish, AG Coran, et al	Hirschsprung-associated enterocolitis: pathogenesis, treatment and prevention	2013	Review article		USA	128	https://link.springer.com/article/10.1007/s00383- 013-3353-1	
26     13.71     Eurifield     Azani, S Eaton, P al, al     International survey on the management of necrosities on the necrosites on the necrosities on the necrosities on the necrosit	25	14	PSI	E Kirby, R Keijzer	Congenital diaphragmatic hernia: current management strategies from antenatal diagnosis to long-term follow-up	2020	Review article		Ireland, Canada	28	https://link.springer.com/article/10.1007/s00383- 020-04625-z	
213.5EuropeCongensano, Staton, Missene, et alCongensano, Staton, d'adients with ecophagel atresia2020Consensus1Europe227Consent.com/product/ejournal/Intril/0.1055/s 0033-11631162813.43IAASMAG angopadhywy.Monorectal malformations2015Review article-India94https://www.ncbi.nim.ing.v/mc/articles/proc2913.3EuropeCongensonsCongentation and any and construction of any and construction and any and any any and any any and any any any and any any any any any any any and any any any any and any any any any any any any and any any any any and any	26	13.71	EurJPS	A Zani, S Eaton, P Puri, et al	International survey on the management of necrotizing enterocolitis	2015	Survey		Europe	96	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0034-1387942	
28     13.43     JAPS     AN Gangopadhyw, V Pandey     An concrectal mailformations     2015     Review article     -     India     94     https://www.nbinn.mb.gov/gmc/articles/pmc 42674/s/       29     13     Eur/Ps     C Delgado-Miguel, AJ Multo-S-terrano, et al     Complicated acute appendicitis during COVID-19 pandemi: the hidden egidemic in children     2021     Retrospective review     168     Spain     13     connect.com/product/ejournals/html/10.1055/s 0034.1123992       30     12     Eur/Ps     A Zani, S Eaton, F Morini, et al     Curopean Paedatric Surgeon's Association survery et al     2017     Survey     -     Europe     60     connect.com/product/ejournals/html/10.1055/s 0038.1683991       31     12     Eur/Ps     JZmmer, S Eaton, IE     State of play-eight decades of surgery for esophageal atresia     2019     Review article     -     Europe     36     connect.com/product/ejournals/html/10.1055/s 0038.1683150       32     11.67     Eur/Ps     R Baird, MLaberge- repair a critical review of recent Revaluer     2014     Review article     -     Canada     105     connect.com/product/ejournals/html/10.1055/s 0038.1683150       33     11.38     JJAPS     DC Acosson, P Cuuderna, R Malabch, et al     Epidemiology of pediatric trauma and the suptern in urban India: A tertiary creat hospital-based corregreence     2014     Review article     -     Europe     91	27	13.5	EurJPS	C Dingemann, S Eaton, G Aksnes, et al	ERNICA consensus conterence on the management of patients with esophageal atresia and tracheoesophageal fistula: diagnostics, preoperative, operative, and	2020	Consensus		Europe	27	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0039-1693116	
13EurlyC Delgado-Miguel, Al Mulco-Serrano, et alComplicated acute appendicitis during COVID-19 panelmin: the hidden agledinis in children budden agledinis in children and the children of the schlagendis212Retrospective review168Spain133Complication complication contec.com/products/journals/html/10.0155/s conec.com/products/journals/html/10.0155/s conec.com/products/journals/html/10.0155/s conec.com/products/journals/html/10.0155/s 0058-12339313112EurlyJZImmer, 5 Etaon, F Kun, IE Murchison, et alState of play: eight decades of urgery for esophagel atresia repair a critical review of recent literature and the current status as per the StoPEL trials and the current status as per the StoPEL	28	13.43	JIAPS	AN Gangopadhyay, V Pandey	Anorectal malformations	2015	Review article		India	94	https://www.ncbi.nlm.nih.gov/pmc/articles/pmc 4268748/	
1012EuripsA Zani, S Eaton, F Morini, et alEuropean Paediatric Surgeons' Association survey on the management of Hincksprung diseases contex complex co	29	13	EurJPS	C Delgado-Miguel, AJ Muñoz-Serrano, et al	Complicated acute appendicitis during COVID-19 pandemic: the hidden epidemic in children	2021	Retrospective review	168	Spain	13	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0041-1723992	
112EurlByJ Zimmer, S Eaton, LEState of play: eight decades of surgery for esophageal artesia2019Review article-Europe36Interplay: connect.com/products/journals/htm//0.1055/s 0003-1688.551211.67EurJPSR Baird, JM LabergeAnastomotic stricture after esophageal artesia2013Review article-Canada105Interplay: connect.com/products/journals/htm//0.1055/s 0003-1688.551311.38JAASDC Aronson, P Cauderna, R Maibach, et alThe treatment of hepatoblastoma: Its evolution arb the current status as per the SIOPEL trails2014Review article-Europe91https://www.ncbi.nlm.nih.gov/pmc/articles/pmc 42023.44/1410JIAASDC Aronson, P Cauderna, S R Maibach, et alThe treatment of hepatoblastoma: Its evolution arb the surgerince resolution arb perince2013Review article-Europe91https://www.ncbi.nlm.nih.gov/pmc/articles/pmc 32023.47/159JIAASS Solanki, V Bhatagar, AK Gupta, et alCrosse fused frenal ectopia: Challenges in diagnosis and management complications: an analysis2013Review article61India81https://www.ncbi.nlm.nih.gov/pmc/articles/pmc 32023.77167.2JIAPSSolanki, V Bhatagar, AK Agarwal, RM Shulds, D erepariaceCrosse fused frenal ectopia: Challenges in diagnosis and management complications: an analysis2013Review article6India81https://www.ncbi.nlm.nih.gov/pmc/articles/pmc 32023137136.33JIAPS<	30	12	EurJPS	A Zani, S Eaton, F Morini, et al	European Paediatric Surgeons' Association survey on the management of Hirschsprung disease	2017	Survey		Europe	60	https://www.thieme- connect.com/products/ejournals/html/10.1055/s 0036-1593991	
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**Figure 2:** Distribution of the top-cited articles published in pediatric surgery between 2013 and 2022.

**Table 2:** Topics covered in the top cited articles.

Subject of the scientific paper	Number of articles
Esophageal atresia/Tracheo-esophageal fistula	6
Necrotizing enterocolitis	5
Acute appendicitis	4
Hirschsprung's associated enterocolitis	2
Hirschsprung's disease	2
Congenital diaphragmatic hernia	2
Tissue engineering	1
Vascular anomalies	1
Enhanced recovery protocol	1
Pediatric thyroidectomy	1
Neuroblastoma	1
Post-operative opioid prescription	1
Telemedicine in the pediatric surgery	1
Biliary atresia	1
Choledochal cyst	1
The global initiative for children's surgery	1
Formulation of research question–Stepwise approach	1
Anorectal malformation	1
Hepatoblastoma	1
Pediatric trauma	1
Crossed fused renal ectopia	1
Pediatric ventriculo-peritoneal shunts	1
Posterior urethral valves	1
Gonadal germ cell tumors	1
Abdominal compartment syndrome	1

The various topics covered in these 40 articles are summarized in [Table 2].

#### DISCUSSION

EA-TEF, NEC, acute appendicitis, HD and CDH were the conditions in the most cited publications. The overwhelming attention received by neonatal surgical conditions is not surprising reflecting the overall improved survival rate of neonates with advances in treatment. Hence, despite the fact that these are common neonatal surgical afflictions with decades of research and welllaid protocols of management, these still form the bulk of the published material that are widely read and cited worldwide. We also see a lower priority of recent advances like telemedicine, ERP and tissue engineering as reflected by the relatively few cited clinical manuscripts despite being the state-of-the-art advances in pediatric surgery, probably because these are practically relevant in very few centres all over the world.

Pediatric surgery is now a firmly established field and JIAPS is the flagbearer pediatric surgical journal in India.<sup>[2]</sup> A comparison of the number of original and review articles in the three leading international pediatric surgery journals with those in JIAPS, highlight a significant difference. Journals with higher IF and those with international repute have a higher number of review articles and original articles compared to retrospective series and case reports which are more in JIAPS.

The scientific community receives longer exposure toward older publications which, thereby, amass a large number of citations irrespective of their scientific significance.<sup>[3]</sup> We have eliminated that bias (arising from the differences between the publication dates of manuscripts) by taking the citations per year into account rather than the total citation count. However, it was not possible to do away with biases such as self-citation, institutional bias, language bias, and powerful person bias in our study. As suggested by several other studies, manuscripts originating from the USA continue to receive a high number of citations which may be reflective of preferential citation of "local research."<sup>[4]</sup>

There are various databases from which bibliometric data of an article may be obtained, all of which have different catchment areas, and hence, have varying citation counts. The user base also varies, for example, "Google Scholar" is a free resource in contrast to the "Web of Science" which is a paid service. The "Google Scholar" citation count is usually higher as it incorporates citations beyond peer-reviewed articles (books, websites, dissertations and open-access online journals) and hence, bibliometric analyses obtained from "Google Scholar" are expected to be more realistic than the other sources.<sup>[5]</sup>

Our observations on citation analysis have shown essential insights into what it takes to be read widely amongst your peers and be cited. Articles on areas that have a longstanding effect in the practice and research of pediatric surgery are the ones that gather the most citations. To become more meaningful, these analyses need to be repeated in certain intervals to project a trend rather than just a snapshot.

## CONCLUSION

The most cited manuscripts as found in this study relate to etiology, diagnosis, and management of common surgical conditions, more so in neonates. Scientific articles on advances in surgical techniques were few. Journals with higher IF and those of international repute publish a higher number of review articles and original articles compared to the Indian journal, JIAPS, which publishes more of retrospective series and case reports. This information would be of value to young pediatric surgeons, especially those in training, to choose their prospective research and create a lasting impact on the field of pediatric surgery. In addition to being a reference of what could be considered as influential, this study also provides reference for researchers as to what makes a "citable" paper in pediatric surgery. For the editorial team, it provides insight into the kind of articles that are of interest to pediatric surgeons worldwide, and this would help develop ideas to further improve penetrance and quality of the journal in the long run.

#### Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Nil.

#### **Conflicts of interest**

There are no conflicts of interest.

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