

# Covid-19 and Pregnancy: A Scientometric Assessment of Global Publications during 2020-21

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## ABSTRACT

**Background:** Covid-19 pandemic had been a disastrous catastrophe on human race affecting different groups of population differently. Pregnancy is a condition which too has been affected by Covid-19. The present study aims to examine the research productivity of Covid-19 and pregnancy.

**Methods:** Keywords pertaining to "Covid-19" and "Pregnancy" were used in search string in Scopus database for the period 2020-21. Data regarding publications growth, productive countries, authors and institutions, high cited papers and significant keywords was retrieved to analyze results.

**Results:** The search retrieved 2945 global publications for the period 2020-21. The USA, UK and China were the most productive countries (with 28.96%, 11.27% and 9.3% global share) on "Covid-19 and Pregnancy". The 613 organizations and 953 authors participated in global research on the subject, with top 20 most productive organizations and authors contributing 26.38% and 9.68% global publication share and 53.64% and 38.53% global citation share respectively. Huazhong University of Science and Technology, China, Tongji Medical College, China and Harvard Medical School, USA were the most productive organizations (with 68, 64 and 52 publications) and Huazhong University of Science and Technology, China (45.88 and 2.12), Tongji Medical College, China (44.96 and 2.08) and University of Health Sciences, Turkey (22.38 and 1.03) led the world as most impactful organizations in terms of citation impact and relative citation index. A Khalil (23 papers), C. Gyamfi-Bannerman (19 papers) and D. Goffman and I.C.

Poon (17 papers each) were the most productive authors and H. Yang (1974 and 4.66), I. Feng (105.12 and 2.5) and D.A. Schwartz (74.82 and 1.77) were the most impactful authors. *American Journal of Obstetrics and Gynecology* (94 papers), *International Journal of Obstetrics and Gynecology* (85 papers) and *European Journal of Obstetrics and Gynecology and Reproductive Biology* (66 papers) were the most productive journals in global research on "Covid-19 and Pregnancy". *JAMA-Journal of the American Medical Association* (45.52), *Acta Obstetrica et Gynecologica Scandinavica* (34.22) and *Ultrasound in Obstetrics and Gynecology* (25.95) were leading most impactful journals. The 61 (2.07%) out of 2945 global publications on "Covid-19 and Pregnancy" registered 102 to 1571 citations per paper and they together received 14620 citations averaging 239.67 citations per paper. These 61 publications are assumed as high cited publications and involve 153 authors, 116 organizations and published in 43 journals.

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DOI: 10.5530/jyp.2021.13s.82

## INTRODUCTION

Covid-19 pandemic started as 'viral pneumonia' outbreak in Wuhan, China in December 2019. It is caused by severe acute respiratory syndrome-coronavirus-2 (SARS-COV-2). It emerged as a serious public health emergency. It spread like a wildfire and assumed as a global pandemic in just few months.<sup>1</sup> Covid -19 had severely impacted all age groups and especially vulnerable are patients with co-morbidities. Women in pregnancy is considered among high-risk population group. SARS-COV-2 initiates physiological changes in pregnant women which are detrimental to both foetus and mother.<sup>2</sup> Covid-19 can cause complications in pregnancy like pre-term birth or still birth in few cases. Women in third trimester are more vulnerable to Covid-19 than non-pregnant women. Vertical transmission of Covid-19 from mother to womb is uncommon. In few cases, pregnancy can alter the body's response to viral infections, hence Covid-19 infection can get complicated. Heart diseases in pregnant women predispose women to severe complications in pregnancy. It also increases the risk of perinatal anxiety and depression. It is advisable to have proper antenatal and postnatal care. Strict observation should be done during labour.<sup>3,4</sup>

Covid-19 also predisposes pregnant women to severe complications of pregnancy like eclampsia, hypertension, preterm birth and low birth

weight. Covid-19 in pregnant women is found to be associated with increased morbidity and mortality. Women and infants with Covid-19 need constant surveillance to save from long-term health effects. Pregnant women are strictly advised to adhere to Covid-19 preventive strategies.<sup>5-7</sup>

## Literature Review

Numerous bibliometric studies have been conducted on Covid-19 in short span of time. Bibliometric studies have been undertaken on pregnancy and different clinical conditions. Wu, Wang, Yan and Zhao evaluated bibliometrically 630 global records on subclinical thyroidism in pregnancy during 1999 and 2018. The data was retrieved from SCI-Expanded, WoS Core Collection and evaluated the current topics of research of subclinical thyroidism in pregnancy.<sup>8</sup> Zhang..[et al.] presented a bibliometric analysis of scientific publications ( $n=1938$ ) on pregnancy with scarred uterus after cesarean using WoS core collection databases: SSCI and SCI-Expanded for the period 1999 to 2018.<sup>9</sup> Tantengco, De Jesus, Gampony, Ornos, Vidal Jr, Cagayan<sup>10</sup> analysed 2009 global publications on molar pregnancy in the last 50 years i.e. from 1970-2020. Data was sourced from the Scopus database and analysed bibliometrically for

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publication growth, productive countries, organizations, authors, high-cited articles, research hotspots.<sup>10</sup> Chen, Chen and Cao *et al.* evaluated bibliometrically 100 high-cited papers on ectopic pregnancy for the period 1965 to 2015. Articles were retrieved from SCI-Expanded database and evaluated according to citations, authorship, journals, originating country and institution.<sup>11</sup> No bibliometric study is present on “Covid-19 and Pregnancy”, hence the present bibliometric study is undertaken.

## Methodology

In the present study, the global publications on “Covid-19 and Pregnancy” were identified and retrieved using a well defined search strategy from the Scopus database (<https://www.scopus.com>). Two sets of keywords related to “Covid-19” and “Pregnancy” were used in “Keyword” and “Title” field tags and limited the search to 2020-2021 period. The search strategy yielded 2945 global records which were further analyzed by top countries, organizations, authors, subjects and journals.

TITLE ( “Covid 19” or “2019 novel coronavirus” or “coronavirus 2019” or “coronavirus disease 2019” or “2019-novel CoV” or “2019 ncov” or covid 2019 or covid19 or “corona virus 2019” or ncov-2019 or ncov2019 or “nCoV 2019” or 2019-ncov or covid-19 or “Severe acute respiratory syndrome coronavirus 2” or “SARS-CoV-2” ) or KEY ( “Covid 19” or “2019 novel coronavirus” or “coronavirus 2019” or “coronavirus disease 2019” or “2019-novel CoV” or “2019 ncov” or covid 2019 or covid19 or “corona virus 2019” or ncov-2019 or ncov2019 or “nCoV 2019” or 2019-ncov or covid-19 or “Severe acute respiratory syndrome coronavirus 2” or “SARS-CoV-2” ) and Key (pregnancy)

## Analysis and Results

### Overall Output

The Scopus database yielded 2945 publications (2020=1766, 2021=1179) on the theme “Covid-19 and pregnancy” during 2020-2021. The global publications (2945) received 31342 citations, averaging 10.64 citations per paper. Of the 2945 publications, 420 (14.26%) resulted from research projects funded by 100+ funding agencies, received 6294 citations, averaging 14.99 citations per paper. The major funding agencies supporting global research in this area were- U.S. Department of Health and Human Services (118 papers), National Institute of Health (104 articles), National Natural Science Foundation of China (57 articles), Eunice Kennedy Shriver National Institute of Child Health and Human Development (29 papers), European Commission (27 papers), Ministry of Science and Technology of the People's Republic of China (25 papers), National Centre For Advancing Translational Sciences (22 papers), National Institute For Health Research (21 papers), National Institute of Allergy and Infectious Diseases (20 papers), Instituto de Salud Carlos III (19 papers). Of the total publications, articles accounted for the largest publication share (54.87%), followed by letters and reviews (15.72% and 15.21%), notes (7.3%), editorial (5.64%) and the rest contributed less than 1% of the publications. Majority of the publications (95.14%) appeared in English language, followed by Spanish (1.87%), Russian (0.95%), Chinese (0.85%), French and German (0.81% each) and the rest in other languages (from 0.24% to 0.03%).

### Top 12 Most Productive Countries

In all, 114 countries participated in global research on “Covid-19 and Pregnancy”, the distribution of which is highly uneven. 75 countries published 1-10 papers each, 32 countries published 11-50 papers each, 5 countries published 51-100 papers each. Only 12 countries published more than 100 papers i.e. 101-853 papers each. The top 12 countries together contributed 92.43% global publication share and more than 100% global citation share. The largest global publication share is contributed by United States (28.96%), followed by United Kingdom,

China, Italy (11.27%, 9.3% and 8.96%) and the rest by India, Spain, Iran, Australia, Canada, Brazil, France, Turkey (from 5.09% to 3.46%). Only two countries registered their citation impact i.e. citations per paper and relative citation index above their group average (12.84 and 1.21): China (37.30 and 3.51) and United States (12.87 and 1.21) (Table 1).

Figure 1 presents the network visualization map of 12 most productive countries generated using VOS Viewer software tool. It depicts United States as the most productive country followed by United Kingdom and China. It also shows the collaborative linkages among the countries.

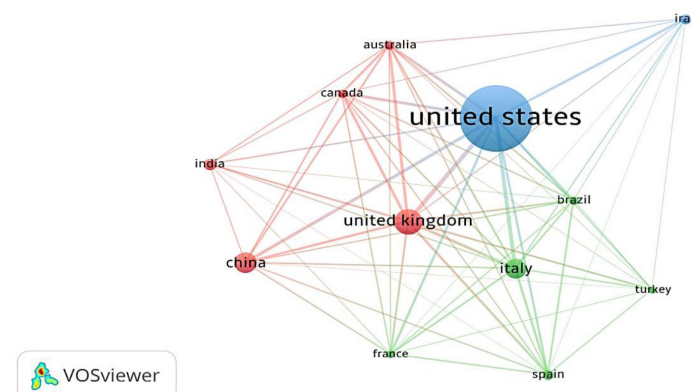
All the top 12 countries had collaborative linkages in “Covid-19 and Pregnancy” among each other and their total collaborative linkages varied from 49 to 323 and individual country to country linkages varied from 1 to 63. The largest collaborative linkages (323, 265 and 188) are depicted by USA, UK and Italy. Among country to country linkages, the largest number of linkages (63) are between USA-U.K., followed USA-Italy (48), USA-China (40), etc. (Table 2).

### Subject-Wise Distribution of Publications

2945 publications on “Covid-19 and Pregnancy” are classified in six broad subjects as identified in Scopus database. Medicine accounted for

**Table 1: Profile of Top 12 Most Productive Countries Application on “Covid-19 and Pregnancy” during 2020-21.**

S.No	Name of the Country	TP	TC	CPP	ICP	%ICP	RCI
1	USA	853	10982	12.87	282	33.06	1.21
2	U.K.	332	3175	9.56	177	53.31	0.90
3	China	274	10219	37.30	82	29.93	3.51
4	Italy	264	2871	10.88	95	35.98	1.02
5	India	150	800	5.33	31	20.67	0.50
6	Spain	138	942	6.83	50	36.23	0.64
7	Iran	137	1119	8.17	43	31.39	0.77
8	Australia	126	1094	8.68	80	63.49	0.82
9	Canada	119	1265	10.63	77	64.71	1.00
10	Brazil	118	580	4.92	41	34.75	0.46
11	France	109	1238	11.36	37	33.94	1.07
12	Turkey	102	657	6.44	16	15.69	0.61
	Total of 12 countries	2722	34942	12.84			1.21
	World total	2945	31342	10.64			



**Figure 1: Collaborative Linkages among Top 12 Countries.**

**Table 2: Covid-19 and Pregnancy: Collaborative Linkages Among Most Productive Countries 2020-21.**

S.No	Name of the Country	Collaborative linkages with other countries	TCL(NOC)
1	USA	2(63), 3(40), 4(48), 5(11), 6(20), 7(26), 8(30), 9(34), 10(22), 11(23), 12(6)	323(11)
2	U.K.	1(63), 3(25), 4(32), 5(12), 6(23), 7(5), 8(32), 9(29), 10(16), 11(15), 12(13)	265(11)
3	China	1(40), 2(25), 4(10), 5(5), 6(8), 8(15), 9(11), 10(7), 11(8), 12(1)	130(10)
4	Italy	1(48), 2(32), 3(10), 5(7), 6(22), 7(6), 8(16), 9(12), 10(11), 11(15), 12(9)	188(11)
5	India	1(11), 2(12), 3(5), 4(7), 6(1), 8(6), 9(5), 10(2), 11(3), 12(1)	53(10)
6	Spain	1(20), 2(23), 3(8), 4(22), 5(1), 7(1), 8(6), 9(7), 10(12), 11(7), 12(6)	113(11)
7	Iran	1(26), 2(5), 4(6), 6(1), 8(6), 9(4), 10(3), 11(1), 12(2)	54(9)
8	Australia	1(30), 2(32), 3(15), 4(16), 5(6), 6(6), 7(6), 9(23), 10(10), 11(5), 12(2)	151(11)
9	Canada	1(34), 2(29), 3(11), 4(12), 5(5), 6(7), 7(4), 8(23), 10(9), 11(8), 12(2)	144(11)
10	Brazil	1(22), 2(16), 3(7), 4(11), 5(2), 6(12), 7(3), 8(10), 9(9), 11(6), 12(4)	107(11)
11	France	1(23), 2(15), 3(8), 4(15), 5(3), 6(7), 7(1), 8(5), 9(8), 10(6), 12(3)	94(11)
12	Turkey	1(6), 2(13), 3(1), 4(9), 5(1), 6(6), 7(2), 8(2), 9(2), 10(4), 11(3)	49(11)

TCL (NOC)=Total collaborative linkages (Number of countries)

**Table 3: Subject-Wise Breakup of Global Publications on “Covid-19 and Pregnancy” during 2020-21.**

S.No	Subject	TP	TC	CPP	%TP
1	Medicine	2706	29265	10.81	91.88
2	Biochemistry, Genetics and Molecular Biology	207	1722	8.32	7.02
3	Nursing	183	563	3.08	6.21
4	Immunology and Microbiology	163	1728	10.60	5.53
5	Pharmacology, Toxicology and Pharmaceutics	84	832	9.90	2.85
6	Health Professions	67	2002	29.88	2.27
	Global Total	3410	36112	10.59	

the largest publication share (91.88%), followed by Biochemistry, Genetics and Molecular Biology (7.03%), Nursing (6.21%), Immunology and Microbiology (5.53%), Pharmacology, Toxicology and Pharmaceutics (2.85%) and Health Professions (2.28%). In terms of citation impact, publications on Pharmacology, Toxicology and Pharmaceutics registered the highest citation impact per paper (29.88) and the least by Nursing (3.08) (Table 3).

### Significant Keywords

The 56 significant keywords (with frequency of appearance varying from 93 to 2910) have been identified which gives some broad ideas on the trends of research on the theme “Covid-19 and Pregnancy”. Among these keywords, the word ‘Coronavirus 2019’ had the highest frequency (2910), followed by Pregnancy (2735), Pregnancy Complications (1240), Adults (1102) etc. (Table 4)

Figures 2 and 3 depicts these significant keywords on “Covid-19 and Pregnancy”. Higher the thickness of node, the higher the frequency of occurrence. Significant keywords are arranged in four clusters i.e. red, green, blue and purple.

### Profile of Top 20 Organizations

In all 613 organizations participated unevenly in global research on “Covid-19 and Pregnancy”: 279 organizations contributed 1-5 papers each, 180 organizations 6-10 papers each, 115 organizations 11-20 papers each and 39 organizations 21-68 papers each. The top 20 organization individually contributed 28 to 68 papers and together they accounted for 26.38% (777 papers) and 53.64% (16811 citations) as global publication and global citation share respectively. On further analysis, it was observed that: (i) Six organizations contributed papers higher than their group average (38.85), (ii) Three organizations registered citation per paper and relative citation index above their group average (21.64 and 0.571) and (iii) Three organizations registered international collaborative share more than their group average (37.79%). (Table 5).

### Collaboration among Top Organizations

A collaboration network chart of top 20 organizations on “Covid-19 and Pregnancy” is shown in Figure 4. It shows collaborative linkages among the organizations. The total collaborative linkages of top 20 organizations varied from 1 to 83 and organization to organization collaborative linkages varied from 1 to 64. The top three organizations with largest collaborative linkages (83, 81 and 58) were: Huazhong University of Science and Technology, Tongji Medical College and Harvard Medical School (Table 6).

### Most Productive Authors

In all, 953 authors contributed on “Covid-19 and Pregnancy” during 2020-21 and their distribution is highly skewed: 951 authors published 1-5 papers each, 110 authors 6-10 papers each and 22 authors 11-23 papers each. The research productivity of top 20 authors varied from 11 to 23 publications per author. The scientometric profile of top authors on “Covid-19 and Pregnancy” is presented in Table 7. On further analysis, it was observed that: (i) Nine out of top 20 authors published above their group average (14.25): A. Khalil (23 papers), C. Gyamfi-Bannerman (19 papers), D. Goffman and L.C. Poon (17 papers each), D. Jamieson and G. Saccone (16 papers each), D. Baud, A. Berghella and A. Tanacan (15 papers each). (ii) Six out of top 20 authors registered citation per paper and relative citation index above their group average

(42.37 and 1.048): H. Yang (197.47 and 4.66), L. Feng (105.82 and 2.5), D.A. Schwartz (74.82 and 1.77), D. Goffman (61.47 and 1.47), L.C. Poon (45.24 and 1.07) and V. Berghella (42.80 and 1.01)[Table 7]. Figure 5 presents the network visualization of top 20 authors on “Covid-19 and Pregnancy”. Links depict collaboration among the authors.

99.63% (1616) of research publications on “Covid-19 and Pregnancy” have appeared in journal medium. Of the total 446 journals which reported 1616 articles, 351 published 1-5 papers each, 50 published 6-10 papers each, 39 published 11-50 papers each and 6 published 51-94 papers each. The top 20 most productive journals published 21 to 94 papers each. Together these 20 journals accounted for 29.07% share. The top 5 most productive journals are: *American Journal of Obstetrics and Gynecology* (94 papers), *International Journal of Gynecology and Obstetrics* (85 papers), *European Journal of Obstetrics and Gynecology and Reproductive Biology* (66 papers) and *American Journal of Perinatology and Obstetrics and Gynecology* (60 papers each). The top 5 most impactful journals in terms of citations per paper are: *JAMA – Journal of the American Medical Association* (45.52), *Acta Obstetricia et Gynecologica Scandinavica*





**Table 6: Collaboration Linkages among Top 20 Organizations in “Covid-19 and Pregnancy” during 2020-21.**

S.No	Name of the Organization	Collaborative Linkages with other Organizations	TCL (NOO)
1	Huazhong University of Science and Technology, china	2(64), 3(1), 4(2), 7(2), 9(1), 11(1), 12(1), 16(1), 19(10)	83(9)
2	Tongji Medical College, China	1(64), 3(1), 4(2), 7(2), 9(1), 11(1), 16(1), 19(9)	81(8)
3	Harvard Medical School, USA	1(1), 2(1), 4(2), 6(2), 9(1), 10(29), 13(20), 14(2)	58(8)
4	University of Toronto, Canada	1(2), 2(2), 3(2), 7(4), 10(1), 12(2), 14(1), 16(3), 19(2)	19(9)
5	Tehran University of Medical Sciences, Iran	7(1)	1(1)
6	Università degli Studi di Milano, Italy	3(2), 14(28), 15(3)	33(3)
7	Monash University, Australia	1(2), 2(2), 4(4), 11(2), 19(2)	12(5)
8	Columbia University Irving Medical Center, USA	4(1), 16(1)	2(2)
9	King's College London, U.K.	1(1), 2(1), 3(1), 11(2), 13(1), 16(6), 17(12)	24(7)
10	Brigham and Women's Hospital, USA	Usa3(29), 4(1), 7(1), 11(1), 13(15), 16(1)	48(6)
11	Imperial College London, U.K.	1(1), 2(1), 3(1), 7(2), 9(2), 16(7), 17(4)	18(7)
12	AP-HP Assistance Publique - Hopitaux de Paris, France	1(1), 4(2), 7(1), 11(1), 20(11)	16(5)
13	Massachusetts General Hospital, USA	3(20), 9(1), 10(15), 20(1)	37(4)
14	Ospedale Maggiore Policlinico Milano, Italy	3(2), 4(1), 6(28), 15(2)	33(4)
15	Sapienza Università di Roma, Italy	6(3), 14(2), 17(3)	8(3)
16	University College London, U.K.	1(1), 2(1), 3(1), 4(3), 8(1), 9(6), 10(1), 11(7), 14(1)	22(9)
17	St George's, University of London, U.K.	6(1), 9(12), 11(4), 14(1), 15(3)	21(5)
18	University of Health Sciences, Turkey	Nil	Nil
19	Renmin Hospital of Wuhan University, China	1(10), 2(9), 4(2), 7(2)	23(4)
20	INSERM, France	12(11)	1(11)

TCL (NOO)=Total collaborative linkages (Number of organizations)

**Table 7: Scientometric Profile of Top 8 Most Productive and Most impactful Organizations each in “Covid-19 and Pregnancy” during 2020-21.**

S.No.	Name of the Authors	Affiliation of the Author	TP	TC	CPP	HI	ICP	ICP%	RCI
1	A. Khalil.	St George's, University of London, U.K.	23	671	29.17	9	13	56.52	0.69
2	C. Gyamfi-Bannerman.	Columbia University Irving Medical Center, USA	19	618	32.53	8	0	0	0.77
3	D. Goffman	Columbia University Irving Medical Center, USA	17	1045	61.47	8	0	0	1.47
4	L.C. Poon.	Chinese University of Hong Kong	17	769	45.24	11	15	88.24	1.07
5	D.J. Jamieson	Emory University School of Medicine, USA	16	547	34.19	7	2	12.5	0.81
6	G. Saccone	Università degli Studi di Napoli Federico II, Italy	16	506	31.63	7	7	43.75	0.75
7	D. Baud	Centre Hospitalier Universitaire Vaudois, Switzerland	15	450	30	7	8	53.33	0.71
8	V. Berghella	Thomas Jefferson University, USA	15	642	42.8	9	7	46.67	1.01
9	A. Tanacan	T.C. Sağlık Bakanlığı, Turkey	15	57	3.8	5	0	0	0.09
10	S.A. Rasmussen	University of Florida College of Medicine, USA	14	553	39.5	6	2	14.29	0.93
11	E. Ferrazzi	Ospedale Maggiore Policlinico Milano, Italy	13	233	17.92	5	2	15.38	0.42
12	H.L. Keskin	T.C. Sağlık Bakanlığı, Turkey	13	62	4.77	5	0	0	0.11
13	F. Prefumo	Università degli Studi di Brescia, Italy	13	319	24.54	7	3	23.08	0.58
14	L. Pomar	Centre Hospitalier Universitaire Vaudois, Switzerland	12	389	32.42	5	7	58.33	0.77
15	H. Yang	Peking University First Hospital, China	12	2369	197.42	9	9	75	4.66
16	D. Di Mascio	Sapienza Università di Roma, Italy	11	452	41.09	5	6	54.55	0.97
17	L. Feng	Tongji Medical College, China	11	1164	105.82	9	3	27.27	2.5
18	F. Mosca	Università degli Studi di Milano, Italy	11	264	24	6	5	45.45	0.57
19	O. Picone.	Hopital Louis-Mourier	11	143	13	5	2	18.18	0.31
20	D.AQ. Schwartz	Medical College of Georgia, USA	11	823	74.82	8	5	45.45	1.77
			285	12076	42.37				

**Table 8: Profile of Top 20 Journals in "Covid-19 and Pregnancy" during 2020-21.**

S.No	Name of the Journal	TP	TC	CPP
1	American Journal of Obstetrics and Gynecology	94	2190	23.30
2	International Journal of Gynecology and Obstetrics	85	915	10.76
3	European Journal of Obstetrics and Gynecology and Reproductive Biology	66	428	6.48
4	American Journal of Perinatology	60	843	14.05
5	Obstetrics and Gynecology	60	639	10.65
6	American journal of obstetrics and gynecology MFM	57	1392	24.42
7	Journal of Maternal-Fetal and Neonatal Medicine	48	395	8.23
8	Journal of Perinatal Medicine	45	155	3.44
9	BJOG: An International Journal of Obstetrics and Gynaecology	43	523	12.16
10	Ultrasound in Obstetrics and Gynecology	37	960	25.95
11	International Journal of Environmental Research and Public Health	34	79	2.32
12	JAMA - Journal of the American Medical Association	33	1502	45.52
13	BMC Pregnancy and Childbirth	31	64	2.06
14	PLoS ONE	26	232	8.92
15	The Lancet Global Health	25	435	17.40
16	Journal of Obstetrics and Gynaecology Research	24	44	1.83
17	Acta Obstetrica et Gynecologica Scandinavica	23	787	34.22
18	Journal of Medical Virology	23	304	13.22
19	Midwifery	21	51	2.43
20	The BMJ	21	495	23.57
	Total of 20 journals	856	12433	14.52
	Global total	1616		

citations. Of 61 high-cited papers, 36 were published as articles, 11 as reviews, 8 as letters, 3 as notes, 2 as short survey and 1 as editorial.

Of the 61 high-cited papers, 18 were contributed by one single organization and rest by two or multiple organizations per paper. The 61 high-cited papers involved 153 authors and 116 organizations. Tongji Medical College, China and Huazhong University of Science and Technology, China each contributed 12 high-cited papers, followed by Wuhan University, China, Remin Hospital of Wuhan University, China and Zhonghan Hospital of Wuhan University, China (5 each) etc. These 61 highly cited papers appeared in 43 journals, of which 6 each appeared in *American Journal of Obstetrics and Gynecology* and *American Journal of Obstetrics and Gynecology MFM* and 4 appeared in *JAMA- Journal of the American Medical Association*.

## SUMMARY

The study evaluates global research on "Covid-19 and Pregnancy" using various qualitative and quantitative indicators. The data was retrieved from Scopus database for the period 2020-21. The global research on "Covid-19 and Pregnancy" comprised 2945 publications. These 2945

publications received 31342 citations, registering 10.64 citations per paper. Only 14.26% (420) publications received funding support from more than 100 agencies, and these funded papers together received 6294 citations averaging to 14.99 citations per paper. Only 2.07% (61 publications) share of 2945 publications reported high-citations above 100, between 102 to 1571 citations per paper.

In all, 114 countries participated in "Covid-19 and Pregnancy" with top 10 countries contributing 92.43% global publication share and more than 10% global citation share. Among top 12 countries, USA, UK and China led in global publications share (28.96%, 11.27% and 9.3%) and China (37.30 and 3.51) and USA (12.87 and 1.21) were most impactful countries. International collaborative share in global output varied from 15.96% to 64.71%. Medicine accounted for the largest share (91.88%) in global output on "Covid-19 and Pregnancy", followed by Biochemistry, Genetics and Molecular Biology (7.03% share), Nursing (6.21% share) etc.

The 613 organizations and 953 authors participated in global research on the subject, with top 20 most productive organizations and authors contributing 26.38% and 9.68% global publications share and 53.64% and 38.53% global citation share. Huazhong University of Science and Technology, China (68 papers), Tongji Medical College, China (64 papers), Harvard Medical School, USA (52 papers), University of Toronto (43 papers) and Tehran University of Medical Sciences (40 papers) were the most productive global organizations and Huazhong University of Science and Technology, China (45.88 and 2.12), Tongji Medical College, China (44.96 and 2.08), University of Health Sciences, Turkey (22.38 and 1.03), Columbia University Irving Medical centre (16.63 and 0.77) and University College London (11.71 and 0.54) were the most impactful organizations registering high citation impact and relative citation index.

A. Khalil (23 papers), C. Gyamfi-Bannerman (19 papers), D. Goffman and L.C. Poon (17 papers each) and D.J. Jamieson (16 papers) were the most productive authors and H. Yang (197.4 and 4.66), L. Feng (105.12 and 2.5), D.A. Schwartz (74.82 and 1.77), D. Goffman (61.47 and 1.47) L.C. and Poon (45.24 and 1.07) were the most impactful authors.

*American Journal of Obstetrics and Gynecology* (94 papers), *International Journal of Obstetrics and Gynecology* (85 papers), *European Journal of Obstetrics and Gynecology and Reproductive Biology* (66 papers), *American Journal of Perinatology and Obstetrics and Gynecology* (60 papers each) were the most productive journals in global research on "Covid-19 and Pregnancy". *JAMA-Journal of the American Medical Association* (45.52), *Acta Obstetrica et Gynecologica Scandinavica* (34.22), *Ultrasound in Obstetrics and Gynecology* (25.95), *American Journal of Obstetrics and Gynecology MFM* (24.42) and *Midwifery* (23.57) were leading most impactful journals. The 61 (2.07%) out of 2945 global publications on "Covid-19 and Pregnancy" registered 102 to 1571 citations per paper and they together received 14620 citations averaging 239.67 citations per paper. These 61 publications are assumed as high-cited publications and involve 153 authors, 116 organizations and published in 43 journals.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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**Article History:** Received: 12-08-2021; Revised: 19-09-2021; Accepted: 20-10-2021.

**Cite this article:** Bansal M, Bansal J, Gupta BM, Kumar A. Covid-19 and Pregnancy: A Scientometric Assessment of Global Publications during 2020-21. J Young Pharm. 2021;13(3) Suppl:s122-s129.