publications

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Supplementary

Malaria Publications before and during COVID-19 Pandemic: A Bibliometric Analysis

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Supplementary Table S1. Top authors that contributed on malaria research publications before and during the COVID-19 pandemic.

Before the COVID-19 pandemic 2018-2019 (n = 679)					During the COVID-19 pandemic 2020-2021 (n = 612)				
Author	**Number of articles**	**%**	**H-index**	**H-index per total articles**	**Author**	**Number of articles**	**%**	**H-index**	**H-index per total articles**
Bousema T.	9	1.33	59	6.56	Dorsey G.	11	1.80	62	5.64
Drakeley C.	9	1.33	77	8.56	Drakeley C.	9	1.47	77	8.56
Tinto H.	8	1.18	35	4.38	Staedke S.G.	9	1.47	42	4.67
Bassat Q.	6	0.88	57	9.50	Tinto H.	8	1.31	35	4.38
Genton B.	6	0.88	55	9.17	Arinaitwe E.	7	1.14	29	4.14
Plucinski M.M.	6	0.88	21	3.50	Bousema T.	7	1.14	59	8.43
Rosenthal P.J.	6	0.88	102	17.00	Kotepui M.	7	1.14	12	1.71
Asante K.P.	5	0.74	32	6.40	Snow R.W.	7	1.14	101	14.43
Bradley J.	5	0.74	68	13.60	Kamya M.	6	0.98	61	10.17
Camara A.	5	0.74	60	12.00	Kamya M.R.	6	0.98	61	10.17
Chandramohan D.	5	0.74	51	10.20	Kotepui K.U.	6	0.98	9	1.50
De Mast Q.	5	0.74	34	6.80	Mccarthy J.S.	6	0.98	92	15.33
Dorsey G.	5	0.74	62	12.40	Nankabirwa J.I.	6	0.98	24	4.00

Guilavogui T.	5	0.74	5	1.00	Tarning J.	6	0.98	10	1.67
Kano S.	5	0.74	26	5.20	White N.J.	6	0.98	18	3.00
Kariuki S.	5	0.74	41	8.20	Wilairatana P.	6	0.98	39	6.50
Khan K.	5	0.74	54	10.80					
Mayor A.	5	0.74	34	6.80					
Thi A.	5	0.74	9	1.80					
Average H-index per total articles				8.10	**Average H-index per total articles**				6.52

Supplementary Table S2. Top affiliations that contributed on malaria research publications before and during the COVID-19 pandemic.

Before the COVID-19 pandemic 2018-2019 (n = 679)			**During the COVID-19 pandemic 2020-2021 (n = 612)**		
Affiliations	**Number of articles**	**%**	**Affiliations**	**Number of articles**	**%**
University of Basel, Basel, Switzerland	11	1.62	Infectious Diseases Research Collaboration, Kampala, Uganda	12	1.96
Swiss Tropical and Public Health Institute, Basel, Switzerland	9	1.33	Centre for Tropical Medicine and Global Health, Nuffield Department Of Medicine, University of Oxford, Oxford, United Kingdom	9	1.47
Ifakara Health Institute, Dar Es Salaam, Tanzania	6	0.88	University of Basel, Basel, Switzerland	7	1.14
Infectious Diseases Research Collaboration, Kampala, Uganda	6	0.88	Department of Medical Microbiology, Radboud University Medical Center, Nijmegen, Netherlands	6	0.98
Liverpool School of Tropical Medicine, Liverpool, United Kingdom	6	0.88	Mahidol-Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand	6	0.98
Mahidol-Oxford Tropical Medicine Research Unit, Faculty Of Tropical Medicine, Mahidol University, Bangkok, Thailand	6	0.88	Malaria Branch, Division of Parasitic Diseases and Malaria, Center for Global Health, Centers for Disease Control and Prevention, Atlanta, Ga, United States	6	0.98
Medicines For Malaria Venture, Geneva, Switzerland	6	0.88	Centre For Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, University of Oxford, Oxford, United Kingdom	5	0.82

Centre For Tropical Medicine and Global Health, Nuffield Department Of Medicine, University of Oxford, Oxford, United Kingdom	5	0.74	London School of Hygiene and Tropical Medicine, London, United Kingdom	5	0.82
Malaria Consortium, London, United Kingdom	5	0.74	Medicines for Malaria Venture, Geneva, Switzerland	5	0.82
Centre For Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, University of Oxford, Oxford, United Kingdom	4	0.59	Swiss Tropical and Public Health Institute, Basel, Switzerland	5	0.82
Department Of Agriculture, Food and Environment, University Of Pisa, Via Del Borghetto 80, Pisa, 56124, Italy	4	0.59			
Department Of Zoology and Animal Physiology, University of Buea, Buea, Cameroon	4	0.59			
Faculty Of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, United Kingdom	4	0.59			
Icrea, Pg. Lluís Companys 23, Barcelona, 08010, Spain	4	0.59			
London School of Hygiene and Tropical Medicine, London, United Kingdom	4	0.59			
Malaria Branch, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, Ga, United States	4	0.59			
Mrc Tropical Epidemiology Group, London School of Hygiene and Tropical Medicine, London, United Kingdom	4	0.59			
National Institute of Health, Ministry of Health, Maputo, Mozambique	4	0.59			

Supplementary Table S3. Top countries that contributed on malaria research publications before and during the COVID-19 pandemic.

Country	Number of articles	% (per 679 articles)	Population (million) per total articles	GDP (Billions of U.S. dollars) per total articles	GDP per capita (U.S. dollars per capita) per total articles	Research and development expenditure (percent of GDP) per total articles	Researchers (per million people) per total articles	Physicians (per 1,000 people) per total articles
Before the COVID-19 pandemic 2018-2019 (n = 679)								
United States	182	26.80	1.83	139.29	417.75	0.02	26.49	0.01
United Kingdom	117	17.23	0.58	28.89	425.30	0.01	40.03	0.05
India	70	10.31	20.07	50.43	36.00	0.01	3.61	0.01
Switzerland	53	7.81	0.16	15.89	1818.68	0.06	104.75	0.08
Nigeria	46	6.77	4.71	11.10	51.30	0.00	0.85	0.01
France	38	5.60	1.73	77.37	1177.63	0.06	129.63	0.17
Netherlands	36	5.30	0.49	28.06	1606.67	0.06	164.22	0.10
Spain	35	5.15	1.36	41.14	861.71	0.04	88.83	0.11
Australia	32	4.71	0.81	54.69	2108.13	0.06	141.63	0.12
Kenya	32	4.71	1.59	3.58	70.31	0.02	6.91	0.01
During the COVID-19 pandemic 2020-2021 (n = 612)								
United States	165	26.96	2.02	153.64	460.79	0.02	29.22	0.02
United Kingdom	117	19.12	0.58	28.89	425.30	0.01	40.03	0.05
India	70	11.44	20.07	50.43	36.00	0.01	3.61	0.01
France	37	6.05	1.77	79.46	1209.46	0.06	133.14	0.18
Germany	37	6.05	2.25	115.14	1381.08	0.08	118.73	0.12
Kenya	35	5.72	1.45	3.28	64.29	0.02	6.31	0.01
Uganda	34	5.56	1.29	13.64	31.18	0.00	0.82	0.01
Australia	32	5.23	0.81	54.69	2108.13	0.06	141.63	0.12
Thailand	31	5.07	2.26	16.84	240.32	0.04	57.74	0.03
Nigeria	30	4.90	7.22	17.02	78.67	0.00	1.30	0.01
Switzerland	30	4.90	0.29	28.07	3213.00	0.11	185.07	0.14

Supplementary Table S4. Top journals that contributed on malaria research publications before and during the COVID-19 pandemic.

Journal	Frequency	%	Cite Score	
Before the COVID-19 pandemic 2018-2019 (n = 679)			2018	2019
Malaria Journal	93	13.7	4.9	5.0
American Journal of Tropical Medicine and Hygiene	41	6.0	4.2	4.0
Plos One	27	4.0	5.4	5.2
Clinical Infectious Diseases	12	1.8	13.8	12.5
Plos Neglected Tropical Diseases	11	1.6	7.4	7.6
BMC Infectious Diseases	10	1.5	4.3	4.1
Infectious Diseases of Poverty	8	1.2	4.1	5.5
Travel Medicine and Infectious Disease	8	1.2	4.1	4.7
BMC Research Notes	7	1.0	2.1	2.1
International Journal of Environmental Research and Public Health	7	1.0	3.1	3.0
Journal of Travel Medicine	7	1.0	2.9	5.5
PLoS Medicine	7	1.0	15.5	15.5
Emerging Infectious Diseases	6	0.9	9.8	8.8
BMC Public Health	5	0.7	4.3	3.9
Chinese Journal of Schistosomiasis Control	5	0.7	0.3	0.2
Cochrane Database of Systematic Reviews	5	0.7	8.0	7.4
Journal of Association of Physicians of India	5	0.7	0.6	0.7
The Lancet Infectious Diseases	5	0.7	31.9	32.4
Tropical Medicine and Health	5	0.7	4.7	4.5
Total	**274**	**40.1**	**131.4**	**132.6**
Average CiteScore			**6.91**	**6.97**
Average CiteScore 2018-2019				**6.95**
During the COVID-19 pandemic 2020-2021 (n = 612)				
Malaria Journal	89	14.5	5.1	5.2
American Journal of Tropical Medicine and Hygiene	30	4.9	4.0	4.4
Plos One	17	2.8	5.3	5.6
PLoS Medicine	9	1.5	13.9	15.0
Pathogens	8	1.3	2.5	3.5
PLoS Neglected Tropical Diseases	8	1.3	7.1	6.8
Scientific Reports	8	1.3	7.1	6.9
BMC Public Health	7	1.1	4.1	4.9
Clinical Infectious Diseases	7	1.1	13.2	17.3
International Journal of Infectious Diseases	7	1.1	7.0	10.8
Journal of Ethnopharmacology	7	1.1	6.0	6.9
Journal of Travel Medicine	7	1.1	13.0	15.2
Tropical Doctor	7	1.1	1.1	1.0
BMC Infectious Diseases	6	1.0	4.4	4.8
BMC Medicine	6	1.0	10.3	12.8
Frontiers in Immunology	6	1.0	8.1	9.8
Infectious Diseases of Poverty	6	1.0	7.2	10.8
The Lancet Infectious Diseases	6	1.0	36.6	50.3
Travel Medicine and Infectious Disease	6	1.0	8.6	14.8
Tropical Medicine and Infectious Disease	6	1.0	3.6	4.8
China Tropical Medicine	5	0.8	N/A	0.1
Emerging Infectious Diseases	5	0.8	9.8	13.0
Tropical Parasitology	5	0.8	2.1	2.1

Vaccine	5	0.8	5.6	6.7
BMJ Global Health	4	0.7	5.5	7.2
Cochrane Database of Systematic Reviews	4	0.7	7.1	7.6
Frontiers in Cellular and Infection Microbiology	4	0.7	6.5	5.9
Infection and Drug Resistance	4	0.7	3.9	5.6
International Journal of Environmental Research and Public Health	4	0.7	3.4	4.5
The Lancet	4	0.7	91.5	115.3
African Journal of Laboratory Medicine	3	0.5	1.4	1.8
Antimicrobial Agents and Chemotherapy	3	0.5	9.1	9.3
BMC Research Notes	3	0.5	2.6	3.5
Diagnostics	3	0.5	1.4	2.4
eLife	3	0.5	10.6	11.6
Frontiers in Microbiology	3	0.5	7.3	8.2
Frontiers in Pharmacology	3	0.5	6.5	5.9
JCI Insight	3	0.5	9.9	13.4
Journal of Communicable Diseases	3	0.5	0.3	0.2
Journal of Tropical Medicine	3	0.5	2.7	3.3
Nature Communications	3	0.5	20.0	23.2
Pakistan Paediatric Journal	3	0.5	0.1	0.1
Pan African Medical Journal	3	0.5	0.8	1.0
Parasites and Vectors	3	0.5	5.7	6.4
PLoS Pathogens	3	0.5	11.0	10.5
Science	3	0.5	46.8	57.8
Southeast Asian Journal of Tropical Medicine and Public Health	3	0.5	0.8	0.5
The Lancet Global Health	3	0.5	32.1	41.8
Transactions of the Royal Society of Tropical Medicine and Hygiene	3	0.5	2.5	2.9
Tropical Medicine and Health	3	0.5	4.3	4.2
Vector-Borne and Zoonotic Diseases	3	0.5	3.8	4.0
Total	**300**	**49.1**	**305**	**381.4**
Average CiteScore			**9.84**	**12.3**
Average CiteScore 2018-2019				**11.1**

Supplementary Table S5. Top keywords that contributed on malaria research publications before and during the COVID-19 pandemic.

Before COVID-19 pandemic 2018-2019 (n = 679)			**During the COVID-19 pandemic 2020-2021 (n = 612)**		
Keywords	**Occurrences**	**%**	**Keywords**	**Occurrences**	**%**
Human	562	82.77	Human	522	85.29
Malaria	511	75.26	Malaria	471	76.96
Humans	462	68.04	Fever	410	66.99
Article	426	62.74	Article	407	66.50
Fever	408	60.09	Humans	392	64.05

Male	400	58.91	Male	322	52.61
Female	351	51.69	Female	317	51.80
Adult	315	46.39	Plasmodium falciparum	283	46.24
Child	234	34.46	Adult	282	46.08
Major clinical study	218	32.11	Malaria falciparum	240	39.22

Supplementary Table S6. Top funding sources for malaria research publications before and during the COVID-19 pandemic.

Funding sponsor	Frequency	%
Before COVID-19 pandemic 2018-2019 (n = 679)		
No funding sponsor	369	54.3
Having funding sponsors	310	45.7
Top funding sponsors		
National Institutes of Health (NIH), USA	74	10.9
National Institute of Allergy and Infectious Diseases (NIAID), USA	43	6.3
Bill and Melinda Gates Foundation (BMGF), USA	34	5.0
Wellcome Trust (WT), UK	29	4.3
Medical Research Council (MRC), UK	28	4.1
Department for International Development (DFID), UK	22	3.2
United States Agency for International Development (USAID), USA	16	2.4
World Health Organization (WHO), USA	16	2.4
Fogarty International Center (FIC), USA	13	1.9
Global Fund to Fight AIDS, Tuberculosis and Malaria, Switzerland	11	1.6
Centers for Disease Control and Prevention (CDC), USA	8	1.2
During the COVID-19 pandemic 2020-2021 (n = 612)		
No funding sponsor	305	49.8
Having funding sponsors	307	50.2
Top funding sponsors		
National Institutes of Health (NIH), USA	51	8.3
National Institute of Allergy and Infectious Diseases (NIAID), USA	45	7.4
Bill and Melinda Gates Foundation (BMGF), USA	38	6.2
Wellcome Trust (WT), UK	26	4.2

Medical Research Council (MRC), UK	21	3.4
Fogarty International Center (FIC), USA	12	2.0
United States Agency for International Development (USAID), USA	10	1.6
Government of the United Kingdom, UK	10	1.6
Department for International Development (DFID), UK	9	1.5
National Natural Science Foundation of China, China	8	1.3
Department of Biotechnology, Ministry of Science and Technology, India	7	1.1
Agence Nationale de la Recherche (ANR), France	7	1.1

Supplementary Table S7. Top languages for malaria research publications before and during the COVID-19 pandemic.

Before COVID-19 pandemic: 2018-2019 (n = 679)			**During the COVID-19 pandemic 2020-2021 (n = 612)**		
Language	**Frequency**	**%**	**Language**	**Frequency**	**%**
English	642	94.6	English	586	95.8
French	7	1.0	Chinese	7	1.1
Spanish	7	1.0	French	3	0.5
Chinese	5	0.7	Spanish	2	0.3
Czech	2	0.3	Dutch	1	0.2
Turkish	2	0.3	German	1	0.2
German	2	0.3	Russian	1	0.2
Japanese	1	0.1	Japanese	1	0.2
Swedish	1	0.1	Turkish	1	0.2
Portuguese	1	0.1			

Supplementary Table S8. Publication types of malaria research publications before and during the COVID-19 pandemic.

Before COVID-19 pandemic 2018-2019 (n = 679)			After COVID-19 pandemic.2020-2021 (n = 612)		
Publication types	**Frequency**	**%**	**Publication types**	**Frequency**	**%**
Article	640	94.3	Article	575	94.0
Review	17	2.5	Review	22	3.6
Book Chapter	14	2.1	Note	5	0.8
Letter	3	0.4	Letter	4	0.7
Note	2	0.3	Book Chapter	3	0.5
Conference paper	2	0.3			

Supplementary Table S9. Subject areas of malaria research publications before and during the COVID-19 pandemic.

Before COVID-19 pandemic 2018-2019 (n = 679)			After COVID-19 pandemic.2020-2021 (n = 612)		
Subject area	**Frequency**	**%**	**Subject area**	**Frequency**	**%**
Medicine	223	32.8	Medicine	199	32.5
Immunology and Microbiology	47	6.9	Immunology and Microbiology	54	8.8
Biochemistry, Genetics and Molecular Biology	36	5.3	Biochemistry, Genetics and Molecular Biology	44	7.2
Pharmacology, Toxicology and Pharmaceutics	28	4.1	Pharmacology, Toxicology and Pharmaceutics	18	2.9
Agricultural and Biological Sciences	13	1.9	Agricultural and Biological Sciences	15	2.5