#26 POSTER

Social impact of the clinical trials on COVID-19-related vaccines and other drugs

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Introduction

The COVID-19 pandemic has focused social attention on biomedicine and drugs. Social attention to papers about drugs for COVID-19 can be measured with altmetrics. This alternative bibliometric estimates the social impact of papers based on their mentions in traditional media, social media, and other digital platforms.

Objectives

To analyze the social impact of clinical trials on vaccines and drugs for COVID-19. To analyze which drugs and academic journals related to these trials have had the greatest social impact.

Methods

We searched the Clarivate Web of Science (WoS) database for academic articles on drugs and COVID-19 (TS=drug* and TS=covid-19) and then applied the clinical trial filter. Then, we estimated the social impact of these articles by their Altmetric Attention Score (AAS) using the Altmetric bookmarklet. For the 50 most-cited articles in WoS, we also registered all the variables included in the AAS algorithm and other details provided by Altmetric. WoS and Altmetric searches were performed on December 11, 2021.

Results

We identified 627 articles about clinical trials of COVID-19 drugs. The article with the highest AAS reported a clinical trial of the Russian vaccine Sputnik V (Gam-COVID-Vac); this article had the 10th highest AAS of the 20 million articles monitored by Altmetric and the highest AAS of articles published in *The Lancet* (**Table 1**). Seven of the 50 most-cited articles on clinical trials of COVID-19 drugs are in the Altmetric top 100 of all time. Trials of COVID-19 vaccines accounted for 58.2% of the AAS of the 50 most-cited articles, trials of antivirals for 32.1%, trials of immunomodulators (corticosteroids) for 4.5%, trials of monoclonal antibodies for 3.0%, and trials of combined therapies for 2.1% (**Fig. 1**). The five drugs with highest AAS were tozinameran (Pfizer/BioNtech), ChAdOx1 vaccine (AstraZeneca/Oxford), Gam-COVID-Vac (Sputnik V) vaccine, remdesivir, and hydroxychloroquine. Articles published in *NEJM* (n=25) and *The Lancet* (n=10) accounted for 82.4% of the AAS of the 50 most-cited articles (**Fig. 2**). *The Lancet* was the only journal that published clinical trials of vaccines developed in non-Western countries: the Chinese BBIBP-CorV (Sinpharm) and the Russian Gam-COVID-Vac (Gamaleya).

Conclusion

Some articles on clinical trials of COVID-19 drugs are among the 100 articles with the greatest social impact of all time of the 20 million articles monitored by Altmetric. Clinical trials of vaccines had greater social impact than trials of other types of drugs for COVID-19. *NEJM* and *The Lancet* have garnered the most social attention for articles on clinical trials of vaccines and drugs for COVID-19. *The Lancet* published articles about drugs developed outside the Western world, confirming its higher openness to authors from all over the world.

Figure 2. Social impact of the 50 most-cited articles in their respective journals, expressed as a percentage of the total Altmetric Attention Score

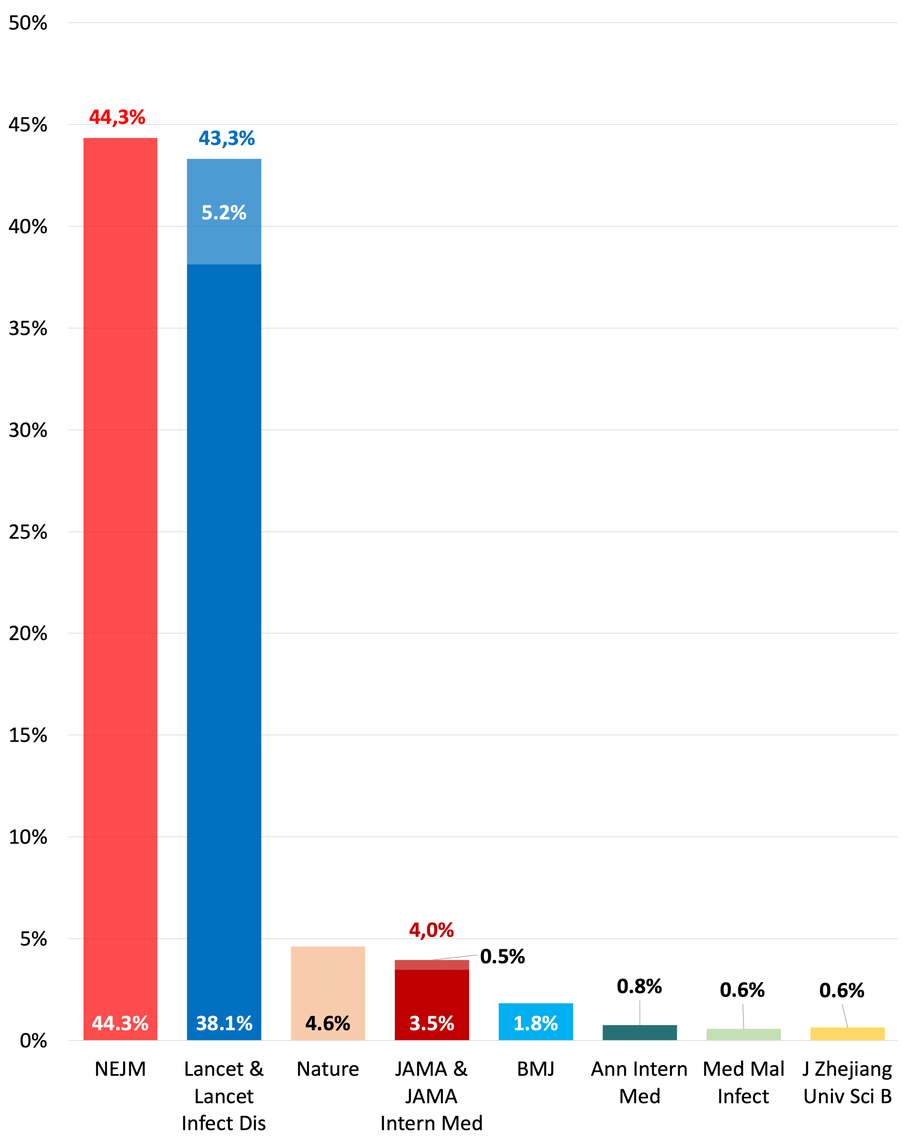

Figure 1. Social impact of vaccines and other drugs evaluated in the 50 most-cited clinical trials on COVID-19 in WoS (percentage of total Altmetric Attention Score)

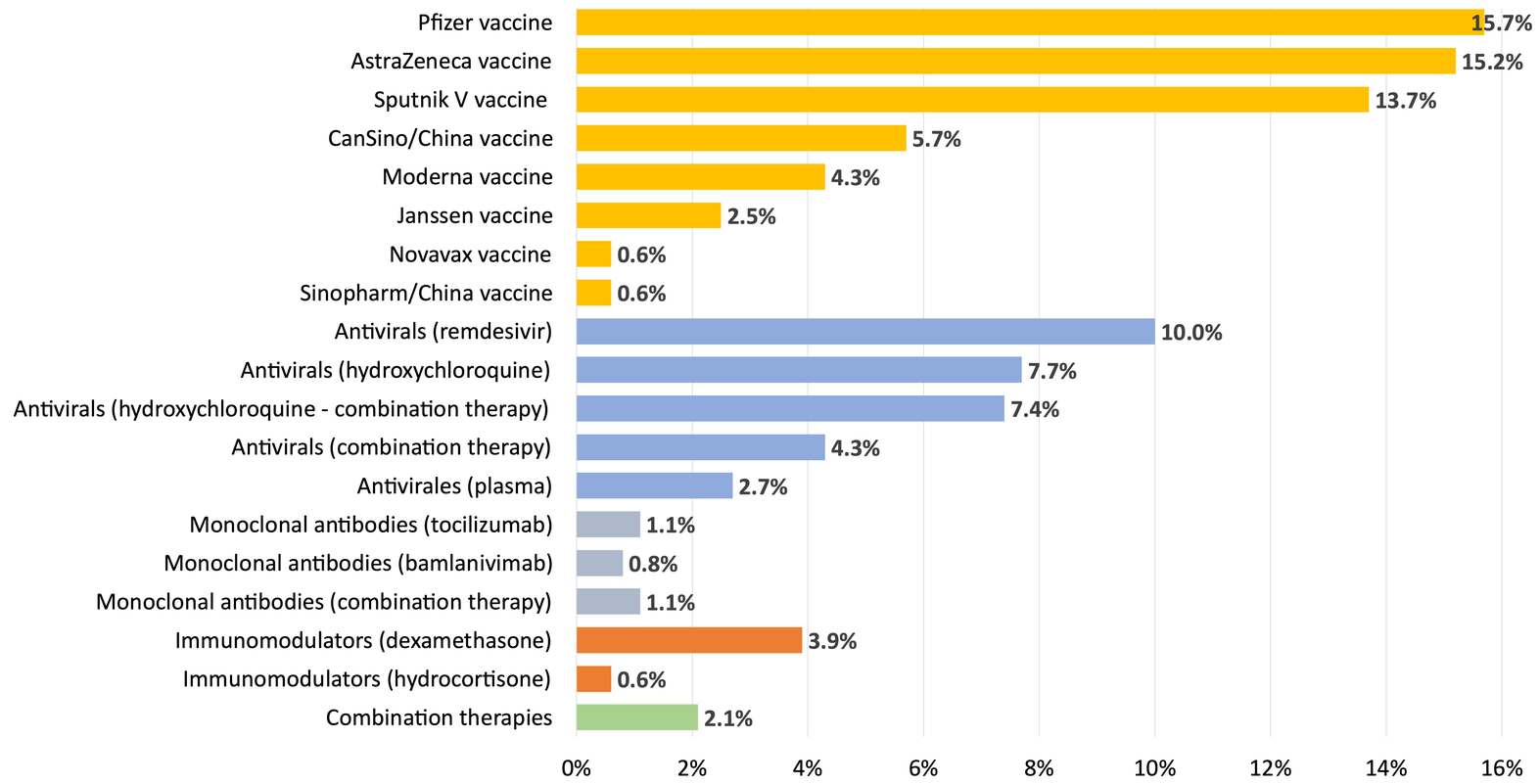

Table 1. Altmetric rankings of the 50 most cited articles on covid-19 clinical trials in WoS

Reference (a)	Citations (b)	Drug	Journal	AAS (c)	Rank 1-50	Overall AAS rank (d)	Journal rank (e)	Same age rank (f)
26. Logunov	398	Sputnik V vaccine	Lancet	28411	**1**	10	1	2
04. Polack	2693	Pfizer vaccine	NEJM	25934	**2**	12	2	2
09. Jackson	817	AstraZeneca vaccine	Lancet	15526	**3**	47	8	7
10. Folegatti	1027	Pfizer vaccine	NEJM	14679	**4**	53	8	9
43. Madhi	1149	AstraZeneca vaccine	Lancet	13715	**5**	62	9	7
07. Wang	2537	Remdesivir	NEJM	13195	**6**	72	10	18
06. Baden	1606	Remdesivir	Lancet	11589	**7**	99	14	19
31. Logunov	353	Sputnik V vaccine	Lancet	10979	**8**	112	17	12
08. Voysey	660	Hydroxychloroquine	NEJM	10091	**9**	136	16	19
05. Beigel	2724	Hydroxychloroquine & other (1)	NEJM	10024	**10**	141	3	25
03. Gautret	1734	Moderna vaccine	NEJM	9996	**11**	142	18	17
01. Horby	3445	Dexamethasone	NEJM	9563	**12**	159	19	16
13. Boulware	2790	Lopinavir - Ritonavir	NEJM	8715	**13**	189	26	27
02. Cao	263	AstraZeneca vaccine	NEJM	8467	**14**	198	29	22
14. Zhu	574	CanSino/China vaccine	Lancet	6859	**15**	306	38	46
18. Cavalcanti	493	Hydroxychloroquine & other (2)	NEJM	6606	**16**	323	38	32
20. Molina	397	AstraZeneca vaccine	Lancet	5938	**17**	413	45	45
11. WHO	312	CanSino/China vaccine	Lancet Infect Dis	4969	**18**	543	10	55
48. Skipper	456	Hydroxychloroquine & other (3)	Med Mal Infect	4773	**19**	587	1	71
25. Tang	409	Hydroxychloroquine	BMJ	4771	**20**	588	22	76
40. Sadoff	496	CanSino/China vaccine	Lancet	4492	**21**	666	60	64
27. Ramasamy	281	Janssen vaccine	NEJM	3995	**22**	835	80	82
47. Sadoff	229	Hydroxychloroquine	Ann Intern Med	3873	**23**	885	9	92
38. Simonovich	744	Remdesivir & other (4)	NEJM	3800	**24**	910	85	87
32. Horby	471	Pfizer vaccine	Nature	3495	**25**	1062	132	97
24. Spinner	305	Plasma	NEJM	3259	**26**	1195	98	117
17. Zhu	349	Hydroxychloroquine	NEJM	3174	**27**	1251	103	100
19. Mulligan	245	Janssen vaccine	NEJM	3098	**28**	1309	104	104
46. Libster	410	Remdesivir	JAMA	2938	**29**	1456	65	139
37. Zhang	252	Plasma	NEJM	2889	**30**	1497	121	139
49. Horby	428	Moderna vaccine	NEJM	2375	**31**	2143	151	166
12. Hung	376	Bamlanivimab	NEJM	2349	**32**	2185	153	174
22. Anderson	743	Interferon beta-1b & other (5)	Lancet	2170	**33**	2527	139	227
28. Tomazini	345	Baricitinib - Remdesivir	NEJM	2023	**34**	2849	186	213
45. Agarwal	357	Novavax vaccine	NEJM	1848	**35**	3343	213	272
44. Xia	382	Dexamethasone	JAMA	1801	**36**	3504	140	282
30. Keech	264	Hydrocortisone	JAMA	1719	**37**	3785	147	296
16. Stone	213	Lopinavir - Ritonavir	Lancet	1647	**38**	4089	199	288
29. Chen	263	Sinopharm/China vaccine	Lancet Infect Dis	1593	**39**	4325	39	311
15. Goldman	252	Plasma	BMJ	1499	**40**	4834	163	372
34. Kalil	314	Tocilizumab - Sarilumab	NEJM	1272	**41**	6442	355	383
23. Sahin	410	Pfizer vaccine	Nature	1171	**42**	7450	924	472
36. Gordon	502	Tocilizumab	NEJM	1100	**43**	8385	435	600
42. Angus	548	Remdesivir	NEJM	1058	**44**	8965	454	586
33. Weinreich	345	Casirivimab - Imdevimab	NEJM	1035	**45**	9336	477	605
50. Gottlieb	293	Tocilizumab	JAMA Intern Med	784	**46**	15302	174	909
35. Salama	188	Bamlanivimab - Etesevimab	JAMA	769	**47**	15807	448	781
41. Salvarani	265	Tocilizumab	JAMA Intern Med	706	**48**	18164	203	1063
39. Hermine	342	Tocilizumab	NEJM	693	**49**	18644	803	987
21. Chen	435	Hydroxychloroquine	J Zhejiang Univ Sci B	333	**50**	62571	1	2391

(a) References of the 50 articles analyzed are available at http://ow.ly/mMff50JzPW6 (b) Article citations in the Web of Science database. (c) Altmetric Attention Score. (d) Overall AAS ranking of the scientific article among the 19,682,269 registered by Altmetric. (e) AAS ranking of the article in the journal in which it was published. (f) AAS ranking of the article among all published articles of similar age. (1) Hydroxychloroquine and azithromycin. (2) Hydroxychloroquine with or without azithromycin. (3) Hydroxychloroquine and azithromycin. (4) Remdesivir, hydroxychloroquine, lopinavir, and interferon beta-1a. (5) Interferon beta-1b, lopinavir-ritonavir, and ribavirin.

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https://link.springer.com/content/pdf/10.1007/s00228-022-03333-y.pdf

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