

Table S1. Definitions of vaccine effectiveness in comparative studies of mRNA versus non-mRNA COVID-19 vaccines

No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
1	Hulme et al. (2022) [1]	UK, 2021	Health and social care workers	18–64	317,341	Retrospective cohort	IRR	Pfizer	AstraZeneca	Infection, Hospitalization, ICU admission
2	Tabak et al. (2021) [2]	USA, 2021	General population	≥ 18	1,237,097	Test-negative design	(1-OR)×100	Pfizer, Moderna	Janssen	Infection
3	Arregoces-Castillo et al. (2022) [3]	Colombia, 2021	General population	≥ 60	2,828,294	Retrospective cohort	(1-HR)×100	Pfizer	AstraZeneca, Janssen, Sinovac-CoronaVac	Hospitalization, death
4	Homan et al. (2022) [4]	Italy, 2021	General population	≥ 16	3,530,967	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Infection, hospitalization, death
5	Nasreen et al. (2022) [2]	Canada, 2020–2021	General population	≥ 18	2,508,296	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Hospitalization, death
6	Ng et al. (2023) [6]	Hong Kong, 2022	Hospital patients	3–105 mo	3,518	Test-negative design	(1-OR)×100	Pfizer	Sinovac-CoronaVac	Infection, severe disease, death
7	Hall et al. (2022) [7]	UK, 2020–2021	HCW	≥ 18	35,768	Prospective cohort	(1-HR)×100	Pfizer	AstraZeneca	Infection
8	Andrews et al. (2022) [8]	UK, 2020–2021	General population	≥ 16	7,106,982	Test-negative design	(1-OR)×100	Pfizer	AstraZeneca	Symptomatic disease, hospitalization, death
9	Robles-Fontan et al. (2022) [9]	Puerto Rico, 2021	General population	≥ 12	2,276,966	Retrospective cohort	(1-RR)×100	Pfizer, Moderna	Janssen	Infection, hospitalization, death
10	Hulme et al. (2023) [10]	UK, 2020–2021	General population	≥ 70	2,780,931	Retrospective cohort	(1-HR)×100	Pfizer	AstraZeneca	Infection, hospitalization, death
11	Baum et al. (2022) [11]	Finland, 2020–2022	General population	≥ 70	896,220	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca	Hospitalization, ICU admission
12	Bienkowski et al. (2023) [12]	Poland, 2021–2022	HIV outpatient clinic	All ages	217	Retrospective cohort	IRR	Pfizer, Moderna	AstraZeneca, Janssen	Infection
13	Chen et al. (2023) [13]	Taiwan, 2022	Patients undergoing hemodialysis	NS	258	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	Novavax, MVC-COV1901	Infection, hospitalization, death
14	Voko et al. (2021) [14]	Hungary, 2021	General population	≥ 16	3,740,066	Retrospective cohort	1-IRR	Pfizer, Moderna	AstraZeneca, Sinopharm, Sputnik V	Infection, death
15	Self et al. (2021) [15]	USA, 2021	Hospital patients	≥ 18	3,689	Case-control	(1-OR)×100	Pfizer, Moderna	Janssen	Hospitalization

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
16	Wan et al. (2022) [16]	Hong Kong, 2022	General population	≥ 60	78,326	Case-control	(1-OR)×100	Pfizer	Sinovac-CoronaVac	Infection, hospitalization, severe disease, death
17	Sritipsukho et al. (2023) [17]	Thailand, 2022	Hospital patients	≥ 18	7,971	Test-negative design	(1-OR)×100	Pfizer	AstraZeneca, Sinovac-CoronaVac	Infection, symptomatic disease
18	Rane et al. (2023) [18]	USA, 2021	Urgent care residents	≥ 12	931,972	Test-negative design	(1-OR)×100	Pfizer	Janssen	Infection
19	Shrotri et al. (2022) [19]	UK, 2020–2021	Long-term care residents	≥ 18	35,033	Prospective cohort	(1-HR)×100	mRNA	AstraZeneca	Infection, hospitalization, death
20	Baum et al. (2021) [20]	Finland, 2020–2021	General population	≥ 16	1,675,618	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca	Infection, hospitalization
21	Suah et al. (2022) [21]	Malaysia, 2021	General population	≥ 15	9,926,361	Retrospective cohort	(1-RR)×100	Pfizer	Sinovac-CoronaVac	Infection
22	Torres et al. (2022) [22]	Chile, 2021	Patients undergoing hemodialysis	≥ 18	12,301	Retrospective cohort	(1-HR)×100	Pfizer	Sinovac-CoronaVac	Infection, hospitalization, death
23	Castelli et al. (2022) [23]	Argentina, 2021–2022	Children	3–17	278,642	Test-negative design	(1-OR)×100	Pfizer	Sinopharm	Infection, death
24	John et al. (2022) [24]	USA, 2021	Patient with cirrhosis	≥ 18	1,910	Test-negative design	(1-OR)×100	Pfizer, Moderna	Janssen	Infection, severe disease
25	Hyams et al. (2021) [25]	UK, 2020–2021	Hospital patients	≥ 80	466	Test-negative design	(1-OR)×100	Pfizer	AstraZeneca	Hospitalization
26	Thompson et al. (2021) [26]	USA, 2021	Hospital ward	≥ 50	41,552	Test-negative design	OR	Pfizer, Moderna	AstraZeneca	Hospitalization, ICU admission
27	Martinez-Baz et al. (2021) [27]	Spain, 2021	General population	≥ 18	20,961	Prospective cohort	(1-RR)×100	Pfizer	AstraZeneca	Infection, hospitalization
28	Kirsebom et al. (2022) [28]	UK, 2022	General population	≥ 18	1,127,517	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Symptomatic disease, hospitalization
29	Kissling et al. (2022) [29]	Europe, 2021	General population	≥ 30	14,282	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Infection
30	Brazete et al. (2023) [30]	Portugal, 2021–2022	Emergency department	≥ 18	1,059	Test-negative design	(1-OR)×100	mRNA	AstraZeneca, Janssen	Infection, symptomatic disease
31	Genc Bahce et al. (2023) [31]	Turkey, 2021	General population	≥ 65	6,168	Retrospective cohort	(1-OR)×100	Pfizer	Sinovac-CoronaVac	Infection, severe disease, death
32	Reynolds et al. (2022) [32]	USA, 2021	General population	≥ 18	2,481	Test-negative design	(1-OR)×100	Pfizer, Moderna	Janssen	Infection, symptomatic disease
33	Shen et al. (2022) [33]	USA, 2021	Patients using immunosuppressant	≥ 18	154,519	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	Janssen	Infection, hospitalization

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
34	Cheng et al. (2022) [34]	Hong Kong, 2021	Patients with chronic kidney disease	≥ 18	224,782	Retrospective cohort	(1-IRR)×100	Pfizer	Sinovac-CoronaVac	Infection, hospitalization, death
35	Park et al. (2023) [35]	Korea, 2022	General population	≥ 60	3,466,930	Retrospective cohort	(1-RR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Severe disease, death
36	Salinas-Martinez et al. (2023) [36]	Mexico, 2020–2021	General population	≥ 18	164,052	Test-negative design	(1-OR)×100	Pfizer	AstraZeneca, CanSino, Sinovac-CoronaVac	Symptomatic disease, hospitalization, severe disease
37	Glampson et al. (2021) [37]	UK, 2020–2021	General population	≥ 16	2,183,939	Retrospective cohort	(1-HR)×100	Pfizer	AstraZeneca	Infection, hospitalization
38	Al-Momani et al. (2022) [38]	Jordan, 2022	Hospital patients	≥ 18	1,121	Case-control	(1-OR)×100	Pfizer	Sinopharm	Hospitalization
39	Kahn et al. (2023) [39]	Argentina, Brazil, Chile, Colombia, 2021	General population	≥ 18	83,708	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca, Janssen, Sputnik V, Sinovac-CoronaVac	Hospitalization, death
40	Niessen et al. (2022) [40]	The Netherlands, 2021	Hospital patients	≥ 18	678	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Hospitalization
41	Chadeau-Hyam et al. (2022) [41]	UK 2020–2021	General population	≥ 5	87,966	Cross sectional	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Infection
42	Perry et al. (2022) [42]	UK, 2020–2021	General population	≥ 50	1,262,689	Retrospective cohort	(1-HR)×100	Pfizer	AstraZeneca	Infection, hospitalization, death
43	van Ewijk et al. (2022) [43]	The Netherlands, 2021	General population	≥ 18	7,842	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Infection
44	Manley et al. (2023) [44]	USA, 2021–2022	Patients undergoing hemodialysis	≥ 18	18,028	Retrospective cohort	(1-OR)×100	Pfizer, Moderna	Janssen	Infection, hospitalization, death
45	Saadh et al. (2022) [45]	Jordan, 2021–2022	Hospital patients	NS	6,132	Retrospective cohort	Rate	Pfizer	AstraZeneca, Sinopharm	Infection, hospitalization, death
46	Bello-Chavolla et al. (2023) [46]	Mexico, 2020–2021	General population	≥ 18	793,487	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca, Janssen, CanSino, Sinovac-CoronaVac, Sputnik V	Infection, hospitalization, death
47	Fano et al. (2022) [47]	Italy, 2021–2022	General population	≥ 12	1,038,039	Retrospective cohort	(1-RR)×100	Pfizer, Moderna	AstraZeneca	Infection

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
48	Parker et al. (2023) [48]	UK, 2021	Patients with chronic kidney disease	≥ 16	426,785	Retrospective cohort	(1-HR)×100	Pfizer	AstraZeneca	Infection, hospitalization, death, all-cause mortality
49	Skowronski et al. (2022) [49]	Canada, 2021	General population	50–69	111,405	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Infection, hospitalization
50	Bjork et al. (2022) [50]	Sweden, 2020–2021	General population	≥ 12	1,384,530	Retrospective cohort	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Infection, hospitalization, severe disease
51	Ostropolets et al. (2022) [51]	USA, 2021	Hospital patients	≥ 10	179,666	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	Janssen	Infection, hospitalization
52	Tsang et al. (2023) [52]	China, 2022	General population	≥ 5	8,636	Prospective cohort	(1-HR)×100	Pfizer	Sinovac-CoronaVac	Infection
53	Rosenberg et al. (2022) [53]	USA, 2021	General population	≥ 18	8,690,825	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	Janssen	Infection, hospitalization
54	Winkelman et al. (2022) [54]	USA, 2021	General population	≥ 0	4,431,190	Retrospective cohort	(1-IRR)×100	Pfizer, Moderna	Janssen	Infection, hospitalization
55	Stowe et al. (2022) [55]	UK, 2021–2022	Hospital patients	≥ 18	409,985	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca	Symptomatic disease, hospitalization
56	Intawong et al. (2023) [56]	Thailand, 2021	General population	≥ 18	63,471	Test-negative design	(1-OR)×100	Pfizer, Moderna	AstraZeneca, Sinovac-CoronaVac, Sinopharm	Infection
57	Nordstrom et al. (2022) [57]	Sweden, 2021	General population	Not specified	1,685,948	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca	Infection, hospitalization, all-cause mortality
58	Wei et al. (2023) [58]	China, 2022	General population	≥ 18	164,151	Case-control	(1-OR)×100	Pfizer	Sinovac-CoronaVac	Hospitalization, death
59	Poukka et al. (2022) [59]	Finland, 2020–2021	HCW	16–69	427,905	Retrospective cohort	(1-HR)×100	Pfizer	AstraZeneca	Infection, hospitalization
60	Kerr et al. (2023) [60]	UK, 2020–2021	General population	≥ 18	3,481,808	Retrospective cohort	(1-RR)×100	Pfizer	AstraZeneca	Hospitalization, death
61	Paris et al. (2021) [61]	France, 2021	HCW	Not specified	8,165	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca	Infection
62	Callaghan et al. (2023) [62]	UK, 2020–2022	Solid organ transplant recipients	≥ 16	42,738	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca	Infection, hospitalization, death
63	Berec et al. (2022) [63]	Czech Republic, 2020	General population	Not specified	10,701,777	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Infection, reinfection, hospitalization, death

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
64	Palinkas et al. (2022) [64]	Hungary, 2021	General population	≥ 18	6,404,702	Retrospective cohort	$(1 - HR) \times 100$	Pfizer, Moderna	Janssen, Sinopharm, Sputnik V	All-cause mortality
65	Voko et al. (2022) [65]	Hungary, 2021	General population	18–100	808,798	Retrospective cohort	$(1 - IRR) \times 100$	Pfizer, Moderna	Janssen, Sinopharm, Sputnik V	Infection, hospitalization, death
66	Eick-Cost et al. (2022) [66]	USA, 2021	US military personnel	Not specified	441,379	Case-control	$(1 - OR) \times 100$	Pfizer, Moderna	Janssen	Symptomatic disease
67	Callaghan et al. (2023) [67]	UK, 2020–2021	General population	≥ 16	43,481	Retrospective cohort	$(1 - HR) \times 100$	Pfizer	AstraZeneca	Infection, death
68	Hermosilla et al. (2022) [68]	Spain, 2021	General population	19–59	167,235	Retrospective cohort	HR	Pfizer	AstraZeneca	Infection
69	Wong et al. (2023) [69]	Malaysia, 2022	General population	≥ 18	1,158,235	Retrospective cohort	$(1 - RR) \times 100$	Pfizer	AstraZeneca, Coronavac	Infection, death
70	Lopez Bernal et al. (2021) [70]	UK, 2021	General population	≥ 16	19,109	Test-negative design	$(1 - OR) \times 100$	Pfizer	AstraZeneca	Infection
71	Yan et al. (2023) [71]	China, 2022	Hospital patients	≥ 18	410,678	Retrospective cohort	$(1 - OR) \times 100$	Pfizer	Coronavac	Severe disease, hospitalization, death
72	Lopez Bernal et al. (2021) [72]	UK, 2020–2021	General population	≥ 70	156,930	Test-negative design	$(1 - OR) \times 100$	Pfizer	AstraZeneca	Symptomatic disease, hospitalization, death
73	Huang et al. (2023) [73]	China, 2022	General population	≥ 18	57,674	Retrospective cohort	$(1 - OR) \times 100$	Pfizer	Sinovac-CoronaVac	Infection, hospitalization
74	Yan et al. (2022) [74]	China, 2022	General population	≥ 18	98,461	Case-control	$(1 - OR) \times 100$	Pfizer	Sinovac-CoronaVac	Severe disease, death
75	Naylor et al. (2022) [75]	Canada, 2020–2021	General population	≥ 18	12,842	Retrospective cohort	$(1 - HR) \times 100$	Pfizer, Moderna	AstraZeneca	Infection, hospitalization, death
76	McKeigue et al. (2022) [76]	UK, 2020–2021	General population	Not specified	55,741	Case-control	$(1 - RR) \times 100$	Pfizer, Moderna	AstraZeneca	Severe disease
77	Mazagatos et al. (2022) [77]	Spain, 2021	General population	≥ 20	1,772	Test-negative design	$(1 - OR) \times 100$	Pfizer, Moderna	AstraZeneca, Janssen	Hospitalization
78	Catala et al. (2023) [78]	UK, 2021	General population	≥ 75	916,128	Retrospective cohort	$(1 - HR) \times 100$	Pfizer	AstraZeneca	Infection
79	Shrotri et al. (2021) [79]	UK, 2020–2021	Long-term care residents	≥ 65	10,412	Prospective cohort	$(1 - HR) \times 100$	Pfizer	AstraZeneca	Infection
80	Del Cura-Bilbao et al. (2022) [80]	Spain, 2020–2021	General population	≥ 16	964,258	Prospective cohort	$(1 - HR) \times 100$	Pfizer, Moderna	AstraZeneca	Infection
81	Acuti Martellucci et al. (2022) [81]	Italy, 2021–2022	General population	All ages	1,279,694	Retrospective cohort	OR	Pfizer, Moderna	AstraZeneca, Janssen	Infection, hospitalization, death

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
82	Cerqueira-Silva et al. (2022) [82]	Brazil, 2020-2121	General population	≥ 18	167,621	Test-negative design	(1-OR)×100	Pfizer	AstraZeneca, Janssen, Sinovac-CoronaVac	Reinfection, hospitalization, death
83	Oliveira et al. (2023) [83]	Brazil, 2022	Children	5-11	6,950	Test-negative design	(1-OR)×100	Pfizer	Sinovac-CoronaVac	Infection, severe disease
84	Paternina-Caicedo et al. (2022) [84]	Colombia, 2021	General population	≥ 40	719,735	Retrospective cohort	(1-HR)×100	Pfizer	Sinovac-CoronaVac	Symptomatic disease, hospitalization, severe disease, death
85	Machado et al. (2022) [85]	Portugal, 2021	General population	≥ 65	1,884,932	Retrospective cohort	(1-HR)×100	Pfizer, Moderna	AstraZeneca	Symptomatic disease, hospitalization, death
86	Kokic et al. (2023) [86]	Serbia, 2021	General population	All ages	169,567	Retrospective cohort	(1-OR)×100	Pfizer	AstraZeneca, Sinopharm, Sputnik V	Symptomatic disease
87	Albreiki et al. (2023) [87]	UAE, 2021-2022	General and ICU populations	All ages	4,618	Case-control	(1-OR)×100	Pfizer	Sinovac-CoronaVac	Hospitalization
88	Reynolds et al. (2022) [88]	USA, 2020-2021	General population	≥ 18	11,826	Cross sectional	Rate	Pfizer, Moderna	Janssen	Infection
89	Suphanchaimat et al. (2022) [89]	Thailand, 2021	General population	All ages	1,698,588	Test-negative design	(1-OR)×100	Pfizer	AstraZeneca	Infection
90	Suarez Castillo et al. (2022) [90]	France, 2021	General population	≥ 50	1,296,351	Test-negative design	1-OR	Pfizer, Moderna	AstraZeneca	Infection, hospitalization, death
91	Villar et al. (2023) [91]	Argentina, Brazil, Egypt, France, Indonesia, Israel, Italy, Japan, Mexico, Nigeria, North Macedonia, Pakistan, Spain, Switzerland, Turkey, UK, Uruguay, USA, 2021-2022	Hospital patients	pregnant	7,692	Prospective cohort	(1-RR)×100	Pfizer, Moderna	AstraZeneca, Janssen, Sinovac-CoronaVac, Sputnik V, BBV152	Infection, severe disease, ICU admission, death
92	Lytras et al. (2022) [92]	Greece, 2021	General population	≥ 15	14,676,605	Retrospective cohort	(1-IRR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Infection, death
93	Britton et al. (2022) [93]	USA, 2021	Pharmacy	≥ 12	1,814,383	Test-negative design	(1-OR)×100	Pfizer, Moderna	Janssen	Infection

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
94	Pinto-Alvarez et al. (2023) [94]	Colombia, 2021–2022	Solid organ transplant recipients	≥ 16	6,963	Prospective cohort	$(1 - HR) \times 100$	Pfizer, Moderna	AstraZeneca, Janssen, Sinovac-CoronaVac	Infection, hospitalization, death
95	Petrovic et al. (2022) [95]	Serbia, 2020–2021	General population	≥ 60	274,120	Retrospective cohort	$(1 - RR) \times 100$	Pfizer	Sinopharm, Sputnik V	Infection
96	Khanam et al. (2022) [96]	Bangladesh, 2021	Hospital patients	≥ 18	14,126	Test-negative design	$(1 - OR) \times 100$	Moderna	AstraZeneca, Sinopharm	Infection, severe disease, death
97	Alali et al. (2021) [97]	Kuwait, 2020–2021	HCW	≥ 20	3,246	Retrospective cohort	$(1 - HR) \times 100$	Pfizer	AstraZeneca	Symptomatic disease
98	Amirthalingam et al. (2021) [98]	UK, 2020–2021	General population	50–89	1,135,205	Test-negative design	$(1 - OR) \times 100$	Pfizer	AstraZeneca	Symptomatic disease
99	Yang et al. (2022) [99]	Hong Kong, 2022	General population	≥ 18	4,993	Cross sectional	$(1 - OR) \times 100$	Pfizer	Sinovac-CoronaVac	Infection
100	Buchan et al. (2022) [100]	Canada, 2021	General population	≥ 18	134,435	Test-negative design	$(1 - OR) \times 100$	Pfizer, Moderna	AstraZeneca	Symptomatic disease, hospitalization, death
101	Bouillon et al. (2022) [101]	France, 2020–2021	General population	≥ 50	28,611,967	Prospective cohort	$(1 - HR) \times 100$	Pfizer, Moderna	AstraZeneca	Hospitalization, death
102	Corrao et al. (2022) [102]	Italy, 2021	General population	≥ 12	5,351,085	Retrospective cohort	1–HR	Pfizer, Moderna	AstraZeneca, anssen	Infection, severe disease
103	Kwok et al. (2023) [103]	Hong Kong, 2022	Hospital patients	≥ 18	327	Case-control	$(1 - OR) \times 100$	Pfizer	Sinovac-CoronaVac	Symptomatic disease, hospitalization, severe disease
104	Clifford et al. (2023) [104]	UK, 2021	General population	≥ 18	75	Prospective cohort	1–RR	Pfizer	AstraZeneca	Infection, transmission
105	Culpan et al. (2023) [105]	Turkey, 2021	HCW	NS	3009	Retrospective cohort	IRR	Pfizer	Sinovac-CoronaVac	Infection
106	Fu et al. (2023) [106]	USA, 2020–2022	General population	≥ 18	10,412,853	Retrospective cohort	$(1 - OR) \times 100$	Pfizer, Moderna	Janssen	Infection, death
107	Bautista et al. (2023) [107]	Mexico, 2021	Hospital patients	NS	94,416	Case-control	$(1 - OR) \times 100$	Pfizer	AstraZeneca, Janssen, Sinovac-CoronaVac, Sputnik V, CanSino	Infection, death

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No.	Study	Country, year	Settings	Age (y)	Sample size	Study design	VE definition	Vaccine type 1	Comparator vaccine type 2	Dependent/ outcome variable
108	Huang et al. (2023) [108]	Taiwan, 2022	General population	≥20	162,219	Test-negative design	1-HR	Pfizer, Moderna	MVC-COV1901	Infection, moderate or severe disease
109	Nogareda et al. (2023) [109]	Chile, Costa Rica, Ecuador, Guatemala, Paraguay, Uruguay, 2021–2022	Hospital patients	≥18	15,241	Case-control	1-OR	Pfizer, Moderna	AstraZeneca, Janssen, Sinovac, CoronaVac, Sputnik V, CanSino, Sinopharm, Covaxin	Infection
110	Patemina-Calcado et al. (2022) [110]	Colombia, 2021–2022	General population	≥18	275,504	Test-negative design	1-OR	Pfizer, Moderna	AstraZeneca, Janssen, Sinovac, CoronaVac	Infection, hospitalization
111	Rosa Duque et al. (2023) [111]	HongKong, 2022	Children	3-18	766,601	Case-control	(1-IRR)×100	Pfizer	Sinovac, CoronaVac	Hospitalization, moderate or severe disease
112	Shin et al. (2023) [112]	Korea, 2021	General population	≥12	5,654,530	Retrospective cohort	RR	Pfizer, Moderna	AstraZeneca	Breakthrough infection
113	Catala et al. (2024) [113]	UK, Spain, Estonia, 2021	General population	≥18	9,909,529	Retrospective cohort	HR	Pfizer	AstraZeneca	Long COVID
114	Tak et al. (2024) [114]	Hong Kong, 2022	General population	≥18	194,684	Case-control	(1-OR)×100	Pfizer	Sinovac, CoronaVac	Infection, hospitalization, death
115	Duric-Petkovic et al. (2024) [115]	Serbia, 2021–2022	Military Medical Academy	≥18	3593	Retrospective cohort	1-OR	Pfizer	Sputnik V, Sinopharm	Infection
116	Kassanjee et al. (2024) [116]	South Africa, 2022	Public sector healthcare users	≥18	2,429,927	Retrospective cohort	1-HR	Pfizer	AstraZeneca, Janssen	Hospitalization, death, severe disease
117	Lee et al. (2024) [117]	Taiwan, 2021–2022	General population	≥18	21,416,151	Retrospective cohort	(1-OR)×100	Pfizer, Moderna	AstraZeneca, Janssen	Infection, severe disease, death
118	Qin et al. (2024) [118]	China, 2022	General population	≥18	8116	Retrospective cohort	(1-HR)×100	Pfizer	Sinovac, CoronaVac	Hospitalization, death, Severe disease

COVID-19, coronavirus disease 2019; VE, vaccine effectiveness; UK, United Kingdom; IRR, incidence rate ratio; ICU, intensive care unit; USA, United States of America; OR, odds ratio; HR, hazard ratio; HCW, health care workers; RR, risk ratio; HIV, human immunodeficiency virus; NS, not specified.

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