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Supplementary information

mRNA-1273 COVID-19 vaccine effectiveness against the B.1.1.7 and B.1.351 variants and severe COVID-19 disease in Qatar

In the format provided by the authors and unedited

Supplementary Material

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Supplementary Table 1. Effectiveness of the mRNA-1273 vaccine against SARS-CoV-2 symptomatic infection and against SARS-CoV-2 asymptomatic infection, between February 1-May 10, 2021.

	≥14 days after first dose and no second dose					≥14 days after second dose				
	Cases (PCR positive)		Controls (PCR negative)		Effectiveness in % (95% CI)*	Cases (PCR positive)		Controls (PCR negative)		Effectiveness in % (95% CI)*
	Vaccinated	Unvaccinated	Vaccinated	Unvaccinated		Vaccinated	Unvaccinated	Vaccinated	Unvaccinated	
Effectiveness against symptomatic infection†										
Any symptomatic infection with SARS-CoV-2	248	36,944	721	36,471	66.0 (60.6-70.7)	1	32,526	72	32,455	98.6 (92.0-100.0)
Effectiveness against asymptomatic infection‡										
Any asymptomatic infection with SARS-CoV-2	215	40,585	406	40,394	47.3 (37.6-55.5)	8	37,768	107	37,669	92.5 (84.8-96.9)

*Vaccine effectiveness was estimated using the test-negative, case-control study design.

†A symptomatic infection is defined as a PCR-positive test conducted because of clinical suspicion due to presence of symptoms compatible with a respiratory tract infection.

‡An asymptomatic infection is defined as a PCR-positive test conducted with no reported presence of symptoms compatible with a respiratory tract infection, that is the PCR testing is done as part of a survey, for pre-travel requirement, or at port of entry into the country.

Supplementary Table 2. Demographic characteristics of the cohort of vaccinated persons who completed at least 14 days after the second vaccine dose and of the comparator cohort of antibody-negative controls.

Characteristics	Vaccinated persons	Antibody-negative controls
Median age (IQR) — years	40 (31-50)	32 (24-42)
Age group — no. (%)		
<30 years	511 (20.3)	30,023 (40.7)
30-39 years	745 (29.6)	21,502 (29.1)
40-49 years	623 (24.7)	11,570 (15.7)
50-59 years	378 (15.0)	6,222 (8.4)
60-69 years	109 (4.3)	2,761 (3.7)
70+ years	154 (6.1)	1,775 (2.4)
Sex		
Male	1,179 (46.8)	32,608 (44.2)
Female	1,341 (53.2)	41,245 (55.9)
Nationality[*]		
Bangladeshi	77 (3.1)	3,551 (4.8)
Egyptian	55 (2.2)	5,787 (7.8)
Filipino	377 (15.0)	4,327 (5.9)
Indian	392 (15.6)	11,133 (15.1)
Nepalese	8 (0.3)	2,573 (3.5)
Pakistani	82 (3.3)	3,807 (5.2)
Qatari	1,145 (45.4)	17,439 (23.6)
Sudanese	32 (1.3)	2,980 (4.0)
Sri Lankan	33 (1.3)	1,995 (2.7)
Other nationalities[†]	319 (12.7)	20,261 (27.4)

*Nationalities were chosen to represent the most populous groups in the population of Qatar.
[†]These comprise 32 other nationalities in Qatar among vaccinated persons and 148 other nationalities among antibody-negative controls.

Supplementary Table 3. STROBE checklist of items that should be included in reporting a case-control study

	Item No	Recommendation	Main text page
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			
Study design	4	Present key elements of study design	20-22
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	20-22, 24, Extended Data 1-4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls	20-24, Extended Data 1-4
		(*b*) For matched studies, give matching criteria and the number of controls per case	20, 23 & Extended Data 1-4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	20-24
Data sources/ measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	20-22
Bias	9	Describe any efforts to address potential sources of bias	23-24
Study size	10	Explain how the study size was arrived at	Extended Data 1-4
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	23-24
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	23-24
		(*b*) Describe any methods used to examine subgroups and interactions	23-24
		(*c*) Explain how missing data were addressed	NA, see p. 20
		(*d*) If applicable, explain how matching of cases and controls was addressed	20
		(*e*) Describe any sensitivity analyses	23-24
Results			
Participants	13	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Extended Data 1-4
		(b) Give reasons for non-participation at each stage	Extended Data 1-4
		(c) Consider use of a flow diagram	Extended Data 1-4
Descriptive data	14	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Table 1 & Supp. Table 2
		(b) Indicate number of participants with missing data for each variable of interest	NA, see p. 20
Outcome data	15	Report numbers in each exposure category, or summary measures of exposure	3-6, Tables 2-4, & Supp. Tables 1-2
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	4-7, Tables 2-4, & Supp. Table 1
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-7, Table 4, Supp. Table 1, & Extended Data 4
Discussion			
Key results	18	Summarise key results with reference to study objectives	7-9
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	9-10
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	10
Generalisability	21	Discuss the generalisability (external validity) of the study results	10
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	11

Abbreviations: NA, not applicable; Supp, Supplementary.