

After vaccination	CanSino <i>n</i> = 72 <i>n</i> (%)	Pfizer/ BioNTech <i>n</i> =152 <i>n</i> (%)	AstraZeneca/ Oxford <i>n</i> = 167 <i>n</i> (%)	Sputnik V <i>n</i> =2 <i>n</i> (%)	Janssen/J&J <i>n</i> =0 <i>n</i> (%)	CoronoVac <i>n</i> =58 <i>n</i> (%)	Moderna <i>n</i> =4 <i>n</i> (%)
Primary breakthrough symptomatic infection							
Total	3 (4.16)	2 (1.31)	7 (4.19)	0 (0.00)	0 (0.00)	2 (3.44)	0 (0.00)
Outpatient	3 (4.16)	2 (1.31)	6 (3.59)	0 (0.00)	0 (0.00)	2 (3.44)	0 (0.00)
Hospitalization	0 (0.00)	0 (0.00)	1 (0.59)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Supplemental oxygen	0 (0.00)	1 (0.65)	1 (0.59)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Mechanical ventilation or Death	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Breakthrough symptomatic re-infection from previously infected participants							
Total	0 (0.00)	0 (0.00)	1 (0.59)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Outpatient	0 (0.00)	0 (0.00)	1 (0.59)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Hospitalization, Supplemental oxygen, Mechanical ventilation or Death	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

**Table S1.** Clinical outcomes of patients presenting COVID-19 breakthrough infections and reinfections after partial vaccination.

<i>Not vaccinated population</i>	<i>n= 63 (%)</i>
<i>Total</i>	63 (100)
<i>Outpatient</i>	62 (98.41)
<i>Hospitalization</i>	1 (1.58)
<i>Supplemental oxygen</i>	2 (3.17)
<i>Mechanical ventilation</i>	0 (0.00)
<i>Death</i>	0 (0.00)

**Table S2.** Clinical outcomes of unvaccinated participants.

After vaccination	CanSino <i>n</i> = 5,432	Pfizer/ BioNTech <i>n</i> =771	AstraZeneca/ Oxford <i>n</i> = 633	Sputnik V <i>N</i> =7	Janssen/J&J <i>n</i> =58	CoronoVac <i>n</i> =155	Moderna <i>n</i> =94
Primary breakthrough symptomatic infection in fully vaccinated							
Total	224	14	10	0	2	1	2
Age, mean (SD)	40.7 (±9.5)	50 (±13.7)	64.8 (±7.1)	NA	42.5 (±9.1)	53	51.5 (±4.9)
Female (%)	107 (47.7)	8 (57.1)	2 (20.0)	0 (0.00)	1 (50.0)	1 (100.0)	2 (100.0)
Diabetes (%)	15 (6.6)	2 (14.2)	3 (30.0)	0 (0.00)	0 (0.00)	1 (100.0)	0 (0.00)
Hypertension (%)	19 (8.4)	3 (21.4)	1 (10.0)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Obesity (%)	37 (16.5)	2 (14.2)	2 (20.0)	0 (0.00)	0 (0.00)	1 (100.0)	0 (0.00)
Breakthrough symptomatic re-infection from previously infected fully vaccinated participants							
Total	15	1	2	0	0	0	0
Age, mean (SD)	37.7 (±9.8)	43	59.5 (±6.3)	NA	NA	NA	NA
Female (%)	7 (46.6)	1 (100.0)	1 (50.0)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Diabetes (%)	1 (6.6)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Hypertension (%)	0 (0.00)	0 (0.00)	1 (50.0)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Obesity (%)	4 (26.6)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Primary breakthrough symptomatic infection in partially vaccinated							
Total	3	2	7	0	0	2	0
Age, mean (SD)	45 (±7)	37.5 (±4.9)	48.1 (±6.8)	NA	NA	46 (±2.8)	NA
Female (%)	1 (33.3)	0 (0.00)	3 (42.8)	0 (0.00)	0 (0.00)	1 (50.0)	0 (0.00)
Diabetes (%)	0 (0.00)	0 (0.00)	2 (28.5)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Hypertension (%)	1 (33.3)	0 (0.00)	2 (28.5)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Obesity (%)	0 (0.00)	0 (0.00)	2 (28.5)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Breakthrough symptomatic re-infection from previously infected partially vaccinated participants							
Total	0	0	1	0	0	0	0
Age, mean (SD)	NA	NA	29	NA	NA	NA	NA
Female (%)	0 (0.00)	0 (0.00)	1 (100.0)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Diabetes (%)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Hypertension (%)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Obesity (%)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

**Table S3.** Clinical characteristics of patients presenting COVID-19 breakthrough infections and reinfections according to gender and the most common comorbidities. NA: Not applicable.

	<i>n</i> = 352 <i>n</i> (%)	<i>S antibody value</i> <i>mean (SD)</i>
<i>Vaccine</i>		
<i>Cansino</i>	311 (88.3)	6,043 ±17,266.8
<i>Pfizer</i>	20 (5.6)	4,036.1 ±7,586
<i>AstraZeneca</i>	21 (5.9)	244.9 ±188.1
<i>Group</i>		
<i>Breakthrough infection</i>	69 (19.6)	21,483.4 ± 30,28.1
<i>Reinfection</i>	3 (0.8)	3,373.1 ± 2,756.1
<i>Previous infection</i>	61 (17.3)	5,055 ± 6,835.3
<i>Without infection</i>	219 (62.2)	1,420.3 ± 4,700.6

**Table S4.** Number of participants serologically tested and mean S antibody production according to administered vaccine and self-reported COVID-19 infection.