

Supplementary Online Content

Robineau O, Zins M, Touvier M, et al; Santé, Pratiques, Relations et Inégalités Sociales en Population Générale Pendant la Crise COVID-19–Sérologie (SAPRIS-SERO) Study Group. Long-lasting symptoms after an acute COVID-19 infection and factors associated with their resolution. *JAMA Netw Open*. 2022;5(11):e2240985. doi:10.1001/jamanetworkopen.2022.40985

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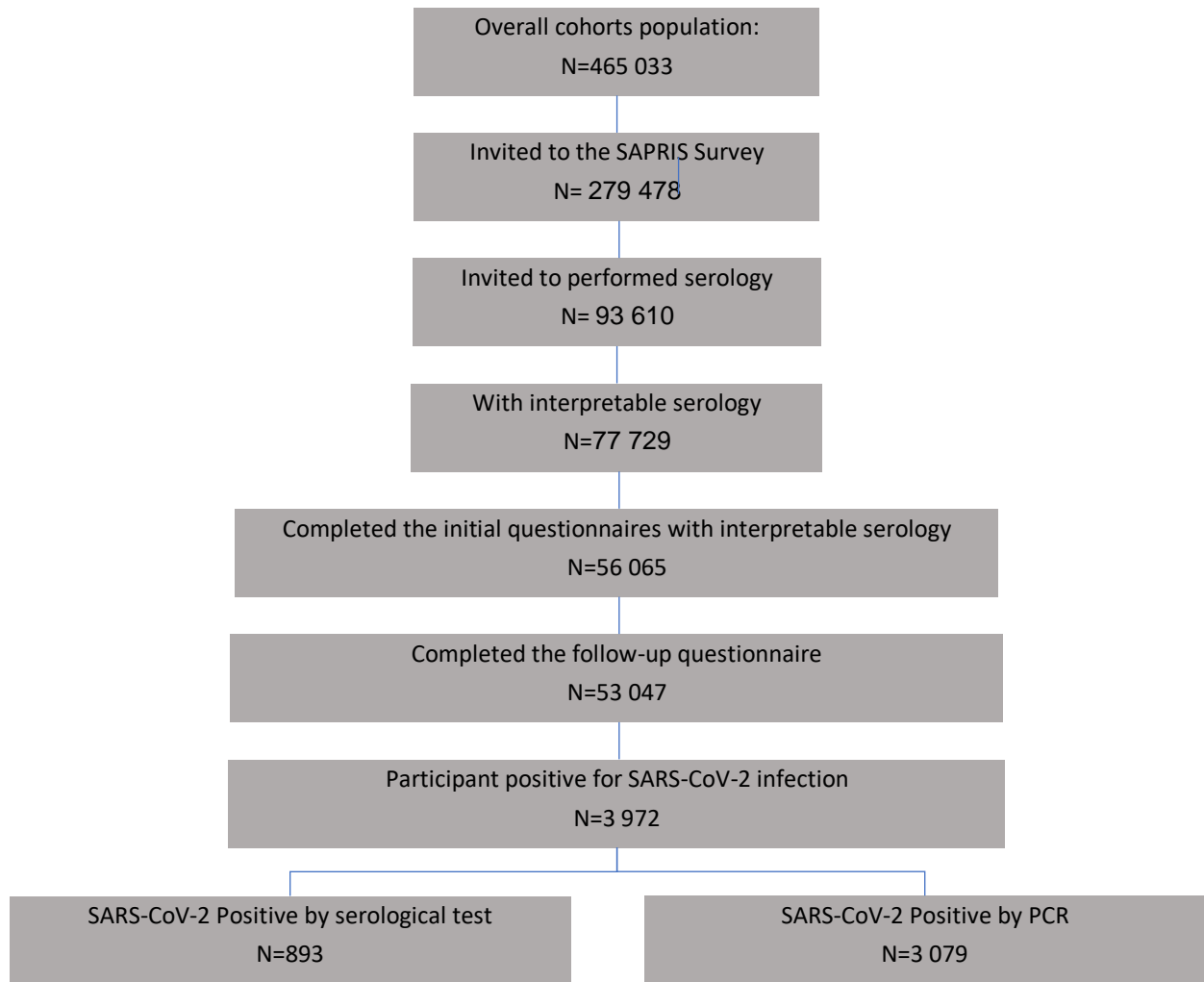
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This supplementary material has been provided by the authors to give readers additional information about their work.



eFigure 1. Flowchart of the Study.

Variables	Male N= 1441 (%)	Female N=2531 (%)	p
Age (SD)	52.0 (13.2)	50.2 (12.4)	<0.001
Chronic respiratory disease	54 (3.76)	204 (8.07)	<0.001
Anxiety/depression	12 (0.84)	82 (3.24)	<0.001
Cancer	49 (3.41)	114 (4.51)	0.11
HTA	108 (7.53)	156 (6.17)	0.11
Diabetes mellitus	29 (2.02)	44 (1.74)	0.61
Chronic cardiological disorder	51 (3.55)	20 (0.79)	<0.001
BMI (Kg/m ²) (SD)	25.3 (3.95)	23.9 (4.46)	<0.001
History of tobacco consumption	708 (50.5)	1203 (48.8)	0.32
Number of symptoms at the acute phase (SD)	2.67 (2.92)	3.27 (3.26)	<0.001
Persistent symptoms	212 (14.7)	649 (25.6)	<0.001

eTable 1. Characteristics of Participants With Biological Result for SARS-CoV-2 Infection Stratified by Sex.

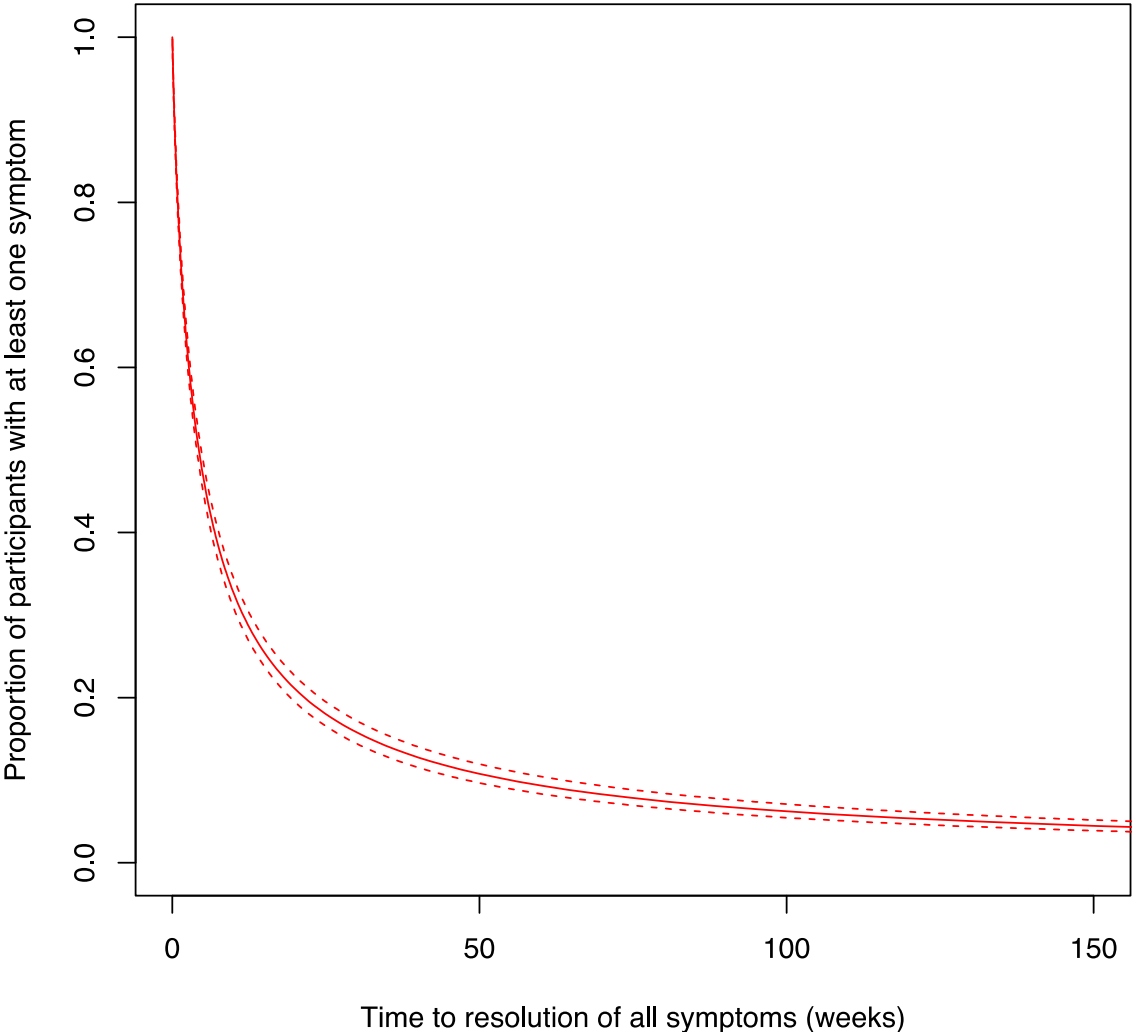
	Age≤40	40<Age≤60	Age>60	p
Variables	N=897 (%)	N=2066 (%)	N=1009 (%)	
Sex	593 (66.1)	1352 (65.4)	586 (58.1)	<0.001
Chronic respiratory disease	39 (4.35)	106 (5.14)	113 (11.3)	<0.001
Anxiety/depression	20 (2.23)	56 (2.71)	18 (1.79)	0.276
Cancer	22 (2.46)	64 (3.10)	77 (7.67)	<0.001
HTA	4 (0.45)	99 (4.80)	161 (16.0)	<0.001
Diabetes mellitus	2 (0.22)	19 (0.92)	52 (5.18)	<0.001
Chronic cardiological disorder	0 (0.00)	22 (1.07)	49 (4.88)	<0.001
History of tobacco consumption	362 (41.3)	963 (47.9)	586 (59.8)	<0.001
BMI (Kg/m ²) (SD)	23.5 (4.47)	24.5 (4.35)	24.9 (4.07)	<0.001
Number of symptoms at the acute phase (SD)	3.40 (3.31)	3.18 (3.13)	2.50 (2.99)	<0.001
Persistent symptoms	169 (18.9)	474 (22.9)	218 (21.6)	0.05

eTable 2. Characteristics of Participants with Biological Result for SARS-CoV-2 Infection Stratified by Age.

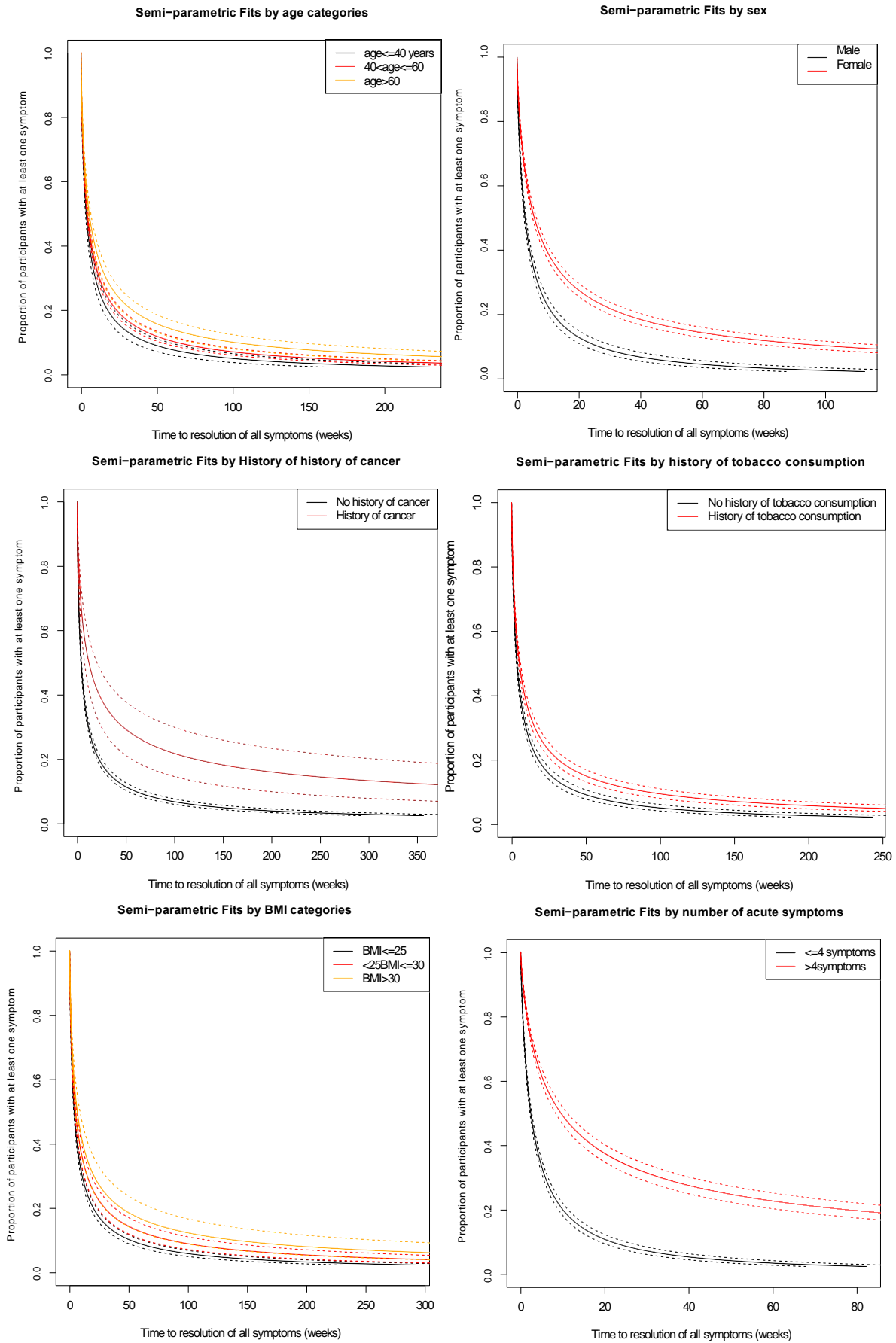
	Asymptomatic infection N=1324	Symptomatic infection N=2648	p
Age			<0.001
<40	273 (20.6%)	624 (23.6%)	
40>age>=60	641 (48.4%)	1425 (53.8%)	
>60	410 (31.0%)	599 (22.6%)	
Sex			0.041
male	510 (38.5%)	931 (35.2%)	
female	814 (61.5%)	1717 (64.8%)	
Anxiety/depression			0.68
No	1293 (97.8%)	2576 (97.5%)	
Yes	29 (2.19%)	65 (2.46%)	
Chronic respiratory disease			0.38
No	1229 (93.0%)	2476 (93.8%)	
Yes	93 (7.03%)	165 (6.25%)	
Cancer			0.88
No	1269 (96.0%)	2531 (95.8%)	
Yes	53 (4.01%)	110 (4.17%)	
HTA			0.002
No	1211 (91.6%)	2488 (94.2%)	
Yes	111 (8.40%)	153 (5.79%)	
Diabetes mellitus			0.59
No	1295 (98.0%)	2595 (98.3%)	
Yes	27 (2.04%)	46 (1.74%)	
Chronic cardiological disorder			0.22
No	1293 (97.8%)	2599 (98.4%)	
Yes	29 (2.19%)	42 (1.59%)	
History of tobacco consumption			0.61
No	655 (51.2%)	1302 (50.3%)	
Yes	624 (48.8%)	1287 (49.7%)	
BMI			0.58
<=25	817 (63.4%)	1651 (64.3%)	
25<BMI<=30	351 (27.3%)	662 (25.8%)	
BMI>=30	120 (9.32%)	254 (9.89%)	
Number of acute symptoms			-
<=4	-	1467 (55.4%)	
>4	-	1181 (44.6%)	

eTable 3. Characteristics of Participants with Positive Biological Result for SARS-CoV-2 Infection.

Semi-parametric Fit for all participants with acute symptoms



eFigure 2. Estimates of Survival for All Symptoms Resolution.



eFigure 3. Estimates of Survival for All Symptoms Resolution by Categories of Associated Factors.

Variables	Cough aHR [95%CI]	Dyspnea aHR [95%CI]	Thoracic pain aHR [95%CI]	Palpitation aHR [95%CI]	Articular pain aHR [95%CI]	Myalgia aHR [95%CI]
(base=<40)						
40>age>=60	0.71 [0.61-0.83]	0.91 [0.71-1.15]	0.81 [0.6-1.1]	0.87 [0.53-1.44]	0.67 [0.49-0.93]	0.75 [0.65-0.87]
>60	0.55 [0.45-0.67]	0.82 [0.6-1.13]	0.87 [0.59-1.3]	0.62 [0.31-1.25]	0.43 [0.28-0.66]	0.63 [0.52-0.75]
Sex (base= male)	0.84 [0.73-0.96]	0.70 [0.57-0.87]	0.90 [0.7-1.17]	0.96 [0.55-1.68]	0.82 [0.61-1.1]	0.92 [0.81-1.05]
Anxiety/depression	1.21 [0.76-1.92]	0.66 [0.36-1.19]	0.93 [0.43-2.01]	1.39 [0.66-2.91]	0.58 [0.25-1.3]	0.77 [0.5-1.18]
Chronic respiratory disease	0.84 [0.62-1.13]	0.82 [0.56-1.21]	1.31 [0.79-2.17]	0.92 [0.37-2.31]	0.7 [0.4-1.23]	0.92 [0.68-1.25]
History of cancer	1.22 [0.79-1.87]	0.76 [0.46-1.26]	0.69 [0.42-1.14]	0.54 [0.07-3.94]	0.62 [0.29-1.3]	0.69 [0.49-0.97]
HTA	1.01 [0.73-1.4]	0.98 [0.6-1.61]	0.89 [0.08-9.91]	0.62 [0.12-3.25]	1.19 [0.67-2.13]	0.88 [0.68-1.13]
Diabetes mellitus	0.68 [0.38-1.21]	0.83 [0.34-2.01]	-	1.43 [0.03-58.69]	0.59 [0.01-59.94]	0.53 [0.05-5.63]
Chronic cardiological disorder	0.76 [0.44-1.31]	0.76 [0.41-1.41]	-	0.82 [0-487.33]	1.34 [0.03-67.61]	0.79 [0.5-1.25]
History of tobacco consumption	0.96 [0.84-1.1]	0.95 [0.78-1.15]	1.03 [0.81-1.3]	0.98 [0.64-1.52]	0.91 [0.7-1.18]	0.96 [0.85-1.08]
BMI (base: <=25)						
25<BMI<=30	0.92 [0.78-1.07]	0.82 [0.64-1.05]	0.91 [0.68-1.22]	0.79 [0.46-1.35]	1.07 [0.78-1.47]	0.90 [0.78-1.04]
BMI>=30	0.77 [0.61-0.96]	0.77 [0.56-1.05]	0.74 [0.47-1.18]	1.08 [0.58-2.02]	0.72 [0.5-1.03]	0.73 [0.59-0.89]
Number of acute symptoms (base=<=4)	0.84 [0.73-0.96]	1.12 [0.88-1.42]	0.79 [0.56-1.11]	1.29 [0.65-2.55]	1.11 [0.75-1.65]	0.74 [0.65-0.85]

Variables	Headache aHR [95%CI]	Anosmia/ageusia aHR [95%CI]	Fever aHR [95%CI]	Diarrhoea aHR [95%CI]	Nausea aHR [95%CI]
age (base: <=40 years)					
40>age>=60	0.94 [0.82-1.07]	1.05 [0.88-1.25]	0.78 [0.68-0.89]	0.86 [0.64-1.17]	0.79 [0.57-1.08]
>60	0.89 [0.75-1.07]	0.96 [0.75-1.21]	0.63 [0.52-0.75]	0.96 [0.67-1.37]	0.72 [0.49-1.06]
Sex (base= male)	0.80 [0.7-0.91]	0.77 [0.66-0.91]	1.04 [0.92-1.16]	0.89 [0.68-1.17]	0.71 [0.51-1]
anxiety/depression	0.89 [0.66-1.21]	0.86 [0.49-1.51]	0.67 [0.48-0.94]	0.53 [0.25-1.14]	0.67 [0.39-1.12]
Chronic respiratory disease	0.84 [0.65-1.07]	0.98 [0.65-1.47]	1.10 [0.86-1.4]	0.79 [0.49-1.28]	1.01 [0.58-1.75]
History of cancer	0.95 [0.7-1.28]	0.94 [0.57-1.55]	0.77 [0.57-1.04]	1.04 [0.63-1.71]	0.74 [0.39-1.39]
HTA	0.98 [0.76-1.25]	0.89 [0.57-1.39]	0.93 [0.73-1.19]	0.83 [0.5-1.39]	0.93 [0.49-1.78]
Diabetes mellitus	1.10 [0.56-2.15]	1.53 [0.01-259.9]	1.38 [0.92-2.09]	-	-
Chronic cardiological disorder	0.92 [0.55-1.55]	-	0.73 [0.49-1.07]	-	-
History of tobacco consumption	0.90 [0.81-1.01]	0.90 [0.78-1.05]	0.97 [0.86-1.09]	0.97 [0.77-1.23]	0.86 [0.64-1.17]
BMI (base: <=25)					
25<BMI<=30	0.88 [0.77-0.99]	0.89 [0.74-1.06]	0.83 [0.73-0.95]	0.85 [0.64-1.13]	0.90 [0.65-1.25]
BMI>=30	0.74 [0.61-0.9]	0.85 [0.63-1.15]	0.66 [0.54-0.79]	0.95 [0.68-1.32]	1.10 [0.72-1.66]
Number of acute symptoms (base=<=4)	0.84 [0.75-0.95]	1.06 [0.91-1.24]	0.80 [0.71-0.9]	1.09 [0.81-1.47]	1.13 [0.8-1.6]

eTable 4. Hazard Ratio for Each Symptom Resolution. aHR: Hazard Ratio; CI: confidence interval. Results with p<0.05 are in bold.

Variables	Asthenia aHR [95%CI]	Attention/ Concentration disorders aHR [95%CI]	Memory loss aHR [95%CI]	Sleep disorder aHR [95%CI]
age (base: <=40 years)				
40>age>=60	0.69 [0.61-0.79]	0.76 [0.57-1.03]	1.04 [0.55-1.98]	0.83 [0.58-1.17]
>60	0.65 [0.55-0.77]	0.56 [0.38-0.83]	0.42 [0.16-1.07]	0.86 [0.58-1.26]
Sex (base= male)	0.65 [0.58-0.73]	0.76 [0.57-1.01]	0.62 [0.31-1.22]	0.6 [0.43-0.82]
anxiety/depression	0.52 [0.34-0.8]	0.48 [0.22-1.06]	-	0.47 [0.1-2.21]
Chronic respiratory disease	0.86 [0.66-1.13]	0.93 [0.48-1.79]	-	1.19 [0.66-2.14]
History of cancer	0.61 [0.44-0.84]	0.50 [0.25-1.03]	-	0.73 [0.32-1.67]
HTA	0.96 [0.74-1.24]	1.71 [0.7-4.19]	-	1.89 [0.98-3.65]
Diabetes mellitus	0.57 [0.33-0.98]	-	-	0.69 [0.01-52.92]
Chronic cardiological disorder	0.94 [0.59-1.48]	-	-	1.05 [0.1-11.4]
History of tobacco consumption	0.88 [0.79-0.99]	1.06 [0.81-1.38]	1.26 [0.8-1.98]	0.74 [0.55-0.99]
BMI (base: <=25)				
25<BMI<=30	0.85 [0.74-0.97]	1.20 [0.87-1.66]	0.80 [0.39-1.62]	0.76 [0.54-1.07]
BMI>=30	0.76 [0.63-0.93]	1.13 [0.71-1.81]	1.49 [0.88-2.51]	0.68 [0.41-1.1]
Number of acute symptoms (base=<=4)	0.58 [0.51-0.65]	0.95 [0.57-1.59]	0.65 [0.37-1.16]	1.65 [1.13-2.41]

eTable 4. Hazard Ratio for Each Symptom Resolution. **aHR: Hazard Ratio; CI: confidence interval. Results with $p < 0.05$ are in bold**

Variables	aHR (%95%)	p
Age (base: <=40 years)		
40>age>=60	0.8 [0.71-0.9]	<0.001
>60	0.78 [0.67-0.91]	0.001
Sex (base= male)	0.64 [0.58-0.71]	<0.001
Anxiety/depression	0.61 [0.4-0.92]	0.02
Chronic respiratory disease	0.95 [0.75-1.2]	0.66
Cancer	0.65 [0.49-0.86]	0.003
HTA	0.97 [0.75-1.24]	0.78
Diabetes mellitus	0.71 [0.41-1.21]	0.21
Chronic cardiological disorder	0.77 [0.49-1.22]	0.27
History of tobacco consumption	0.85 [0.77-0.94]	0.001
BMI (base: <=25)		
25<BMI<=30	0.86 [0.76-0.97]	0.01
BMI>=30	0.78 [0.65-0.95]	0.10
Number of acute symptoms (base=<=4)	0.52 [0.47-0.58]	<0.001

eTable 5. Sensitivity Analysis: Hazard Ratio for All Symptoms Resolution That Were Reported During the Follow-up. aHR: adjusted Hazard Ratio; CI: confidence interval. 2835 (71.4%) individuals with a positive biological test result declared at least one symptom during the follow-up.

Variables	Results of the survey (PCR + serology) aHR [95%CI]	p	Sensitivity analysis (serology only) aHR [95%CI]	p
Age				
40>age>=60	0.88 [0.78-0.99]	0.03	0.55 [0.33-1.15]	0.12
>60	0.79 [0.67-0.92]	0.003	0.43 [0.19-0.92]	0.01
Sex (base= male)	0.67 [0.61-0.75]	<0.001	0.80 [0.48-1.20]	0.31
Anxiety/depression	0.73 [0.51-1.06]	0.12	-	-
Chronic respiratory disease	0.83 [0.65-1.05]	0.10	0.22 [0.10-0.98]	0.03
Cancer	0.68 [0.52-0.90]	0.007		
HTA	0.94 [0.74-1.18]	0.57	0.64 [0.25-1.83]	0.64
Diabetes mellitus	0.76 [0.46-1.28]	0.30	-	-
Chronic cardiological disorder	0.84 [0.52-1.35]	0.47	-	-
History of tobacco consumption	0.87 [0.79-0.97]	0.88	0.92 [0.52-1.59]	0.94
BMI (base: <=25)				
25<BMI<=30	0.85 [0.75-0.96]	0.01	0.47 [0.25-0.90]	0.003
BMI>=30	0.82 [0.68-0.97]	0.03	0.55 [0.26-0.95]	0.03
Number of acute symptoms (base=<=4)	0.45 [0.41-0.5]	<0.001	0.90 [0.47-0.1.10]	0.56

eTable 6. Sensitivity Analysis: Hazard Ratio for All Symptoms Resolution in the Overall Population and in the Subpopulation Defined by a Positive Serology