

1 Table 1. Characteristics of the study population of patients tested for COVID-19

Characteristics	Patients with hypertension (N=75,527)	All patients (N=234,427)
Median age (interquartile rage)- yr.	68(23)	45(35)
Female sex – no. (%)	35,761(47.3)	122,480(52.2)
Confirmed COVID-19- no. (%)	1,911(2.5)	7,590(3.2)
Diabetes mellitus- no. (%)	44,441(58.8)	62,655(26.7)
Cardiovascular disease- no. (%)	4,705(6.2)	5,038(2.1)
Cerebrovascular disease- no. (%)	14,503(19.2)	17,519(7.5)
Ischemic heart disease- no. (%)	12,122(16)	14,191(6.1)
Chronic obstructive pulmonary disease- no. (%)	4,871(6.4)	6,612(2.8)
Malignancy- no. (%)	14,368(19)	24,628(10.5)
Renal replacement therapy- no. (%)	4,338(5.7)	4,525(1.9)
ACE inhibitors or ARBs- no. (%)	13,116(17.4)	13,240(5.6)

3 Table 2. Characteristics of the patients with hypertension tested for COVID-19

	COVID-19 (-)	COVID-19 (+)	Difference (95% CI)
Age			80.6791***
<60	22850(0.97)	665(0.03)	
61-69	15609(0.97)	514(0.03)	
70-79	17899(0.98)	418(0.02)	
≥80	17258(0.98)	314(0.02)	
Sex			56.6345***
Male	38922(0.98)	844(0.02)	
Female	34694(0.97)	1067(0.03)	
Diabetes Mellitus			29.5498***
Yes	30184(0.97)	902(0.03)	
No	43432(0.98)	1009(0.02)	
Cardiovascular disease			2.9933
Yes	69012(0.97)	1810(0.03)	
No	4604(0.98)	101(0.02)	
Cerebrovascular disease			26.7711***
Yes	59392(0.97)	1632(0.03)	
No	14224(0.98)	279(0.02)	
Ischemic heart disease			52.4329***

Yes	61686(0.97)	1719(0.03)	
No	11930(0.98)	192(0.02)	
Chronic obstructive pulmonary disease			53.0971***
Yes	68791(0.97)	1865(0.03)	
No	4825(0.99)	46(0.01)	
Malignancy			180.4433***
Yes	59384(0.97)	1775(0.03)	
No	14232(0.99)	136(0.01)	
			74.6484***
Renal replacement therapy			
Yes	69301(0.97)	1888(0.03)	
No	4315(0.99)	23(0.01)	
ACE inhibitors or ARBs			0.0028
Yes	12785(0.97)	331(0.03)	
No	60831(0.97)	1580(0.03)	

5 Table 3. A multivariate analysis of a likelihood of a positive test for COVID-19

	COVID -19 (+)	Difference (95% CI)
ACE inhibitors or ARBs	1.01(0.89-1.13)	0.9345
61-69	1.36(1.2-1.53)	<.0001
70-79	1.03(0.91-1.18)	0.3633
≥80	0.7(0.6-0.8)	<.0001
Female	1.33(1.21-1.46)	<.0001
Diabetes mellitus	0.92(0.84-1.01)	0.0739
Cardiovascular disease	0.89(0.73-1.09)	0.2599
Cerebrovascular disease	0.76(0.67-0.87)	<.0001
Ischemic heart disease	0.65(0.55-0.75)	<.0001
Chronic obstructive pulmonary disease	0.43(0.32-0.58)	<.0001
Malignancy	0.31(0.26-0.37)	<.0001
Renal replacement therapy	0.19(0.13-0.29)	<.0001

6 * $P < .05$; ** $P < .01$; *** $P < .001$

7 Table 4. Risk factors associated with COVID-19 severity

	Room air	O ₂ supply	MV	ECMO	death	Difference (95% CI)
Age						335.0999***
<60	579(0.87)	72(0.11)	4(0.01)	1(0)	9(0.01)	
61-69	363(0.71)	115(0.22)	10(0.02)	3(0.01)	23(0.04)	
70-79	246(0.59)	113(0.27)	6(0.01)	1(0)	52(0.12)	
≥80	134(0.43)	78(0.25)	4(0.01)	1(0)	97(0.31)	
sex						6.3159
male	562(0.67)	174(0.21)	13(0.02)	3(0)	92(0.11)	
female	760(0.71)	204(0.19)	11(0.01)	3(0)	89(0.08)	
Diabetes mellitus						40.4894***
No	683(0.76)	151(0.17)	11(0.01)	3(0)	54(0.06)	
yes	639(0.63)	227(0.22)	13(0.01)	3(0)	127(0.13)	
Cardiovascular disease						1.1868
No	1255(0.69)	357(0.2)	22(0.01)	6(0)	170(0.09)	
Yes	67(0.66)	21(0.21)	2(0.02)	0(0)	11(0.11)	
Cerebrovascular disease						24.6214***
No	1158(0.71)	309(0.19)	22(0.01)	6(0)	137(0.08)	
Yes	164(0.59)	69(0.25)	2(0.01)	0(0)	44(0.16)	
Ischemic heart disease						8.4676
No	1204(0.7)	334(0.19)	20(0.01)	6(0)	155(0.09)	
Yes	118(0.61)	44(0.23)	4(0.02)	0(0)	26(0.14)	
COPD						12.8381*
No	1300(0.7)	363(0.19)	24(0.01)	6(0)	172(0.09)	
Yes	22(0.48)	15(0.33)	0(0)	0(0)	9(0.2)	

Malignancy						11.4142*
No	1241(0.7)	348(0.2)	22(0.01)	6(0)	158(0.09)	
Yes	81(0.6)	30(0.22)	2(0.01)	0(0)	23(0.17)	
Renal replacement therapy						18.3735***
No	1315(0.7)	367(0.19)	24(0.01)	6(0)	176(0.09)	
Yes	7(0.3)	11(0.48)	0(0)	0(0)	5(0.22)	
ARB/ACEI use before COVID-19 diagnosis						0.5448
No	1094(0.69)	310(0.2)	19(0.01)	5(0)	152(0.1)	
Yes	228(0.69)	68(0.21)	5(0.02)	1(0)	29(0.09)	
ARB/ACEI use after COVID-19 diagnosis						8.7247
No	1259(0.6)	355(0.2)	21(0.01)	5(0)	177(0.1)	
Yes	63(0.67)	23(0.24)	3(0.03)	1(0.01)	4(0.04)	

9 Table 5. A multivariate analysis of risk factors for COVID-19 severity

	Severity grade 1		Severity grade 2		Death	
	Odds Ratio	<i>P</i>	Odds Ratio	<i>P</i>	Odds Ratio	<i>P</i>
ARB/ACEI						
use before	1.05(0.79-	0.759	0.99(0.65-	0.9556	1(0.63-1.58)	0.9851
COVID- 19	1.39)		1.51)			
diagnosis						
ARB/ACEI						
use after	1.35(0.83-2.2)	0.2206	0.92(0.41-	0.8279	0.5(0.17-1.44)	0.1978
COVID- 19			2.03)			
diagnosis						
Age group: 61-	2.89(2.13-	0.0685	3.48(1.84-	0.0175	3.38(1.53-	0.0033
69	3.93)		6.58)		7.46)	
Age group: 70-	4.76(3.47-	0.0002	7.48(4.05-	0.0045	9.99(4.76-	0.0008
79	6.53)		13.83)		20.99)	
Age group:	9.69(6.9-	<.0001	24.66(13.48-	<.0001	35.89(17.31-	<.0001
≥80	13.59)		45.13)		74.43)	
Female	0.66(0.53-	0.0001	0.52(0.38-	<.0001	0.51(0.36-	0.0002
	0.82)		0.72)		0.73)	
Diabetes	1.46(1.17-	0.0007	1.63(1.17-	0.0038	1.79(1.24-	0.0018
mellitus	1.81)		2.27)		2.57)	
Cardiovascular	0.98(0.62-	0.9361	0.93(0.48-	0.8206	0.88(0.43-	0.7089
disease	1.56)		1.78)		1.77)	
Cerebrovascul	1.16(0.87-	0.3179	1.08(0.73-	0.7028	1.23(0.82-	0.3121
ar disease	1.54)		1.58)		1.84)	
Ischemic heart	0.99(0.71-	0.9361	0.97(0.62-	0.8956	0.93(0.57-	0.7828
disease	1.38)		1.53)		1.52)	

COPD	1.44(0.76- 2.69)	0.2611	0.92(0.41- 2.05)	0.8334	1.04(0.46- 2.34)	0.9345
Malignancy	1.17(0.79- 1.73)	0.4253	1.36(0.82- 2.24)	0.2299	1.45(0.85- 2.44)	0.17
Renal replacement therapy	9.99(3.82- 26.1)	<.0001	4.13(1.31- 13.02)	0.0154	5.64(1.71- 18.58)	0.0045

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