



Post COVID-19 Condition

Early findings from a longitudinal cohort of hospitalized COVID-19 patients in South Africa

NIOH: Long COVID Update

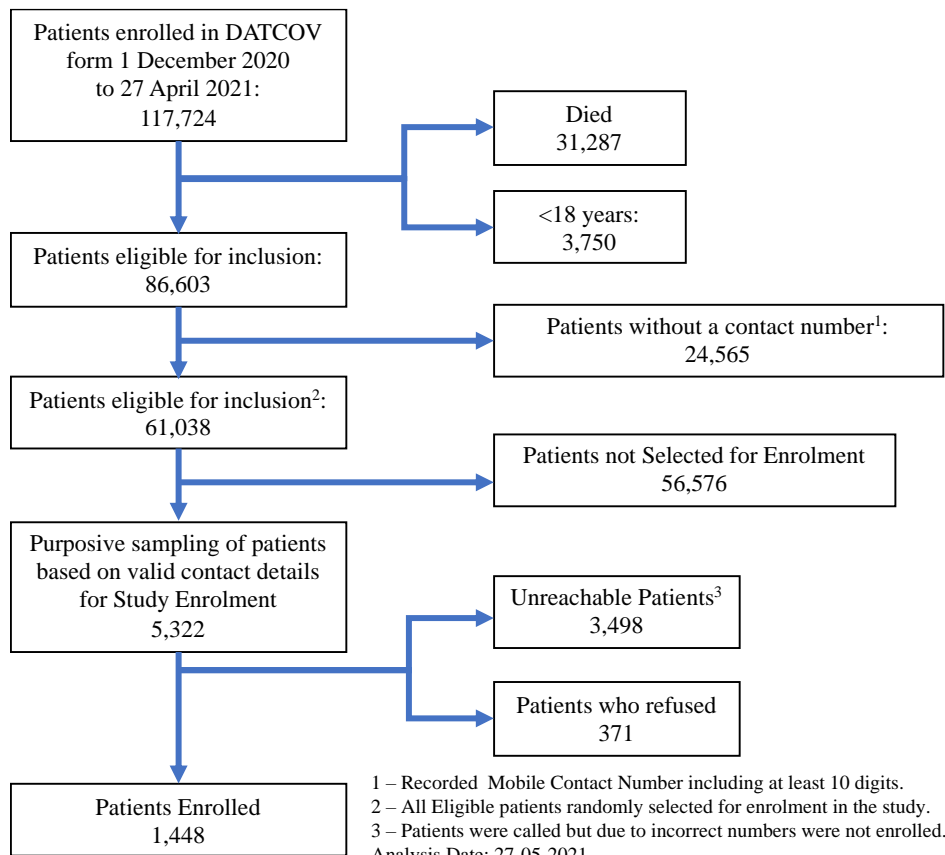
Thursday, 8 July 2021

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Study Overview

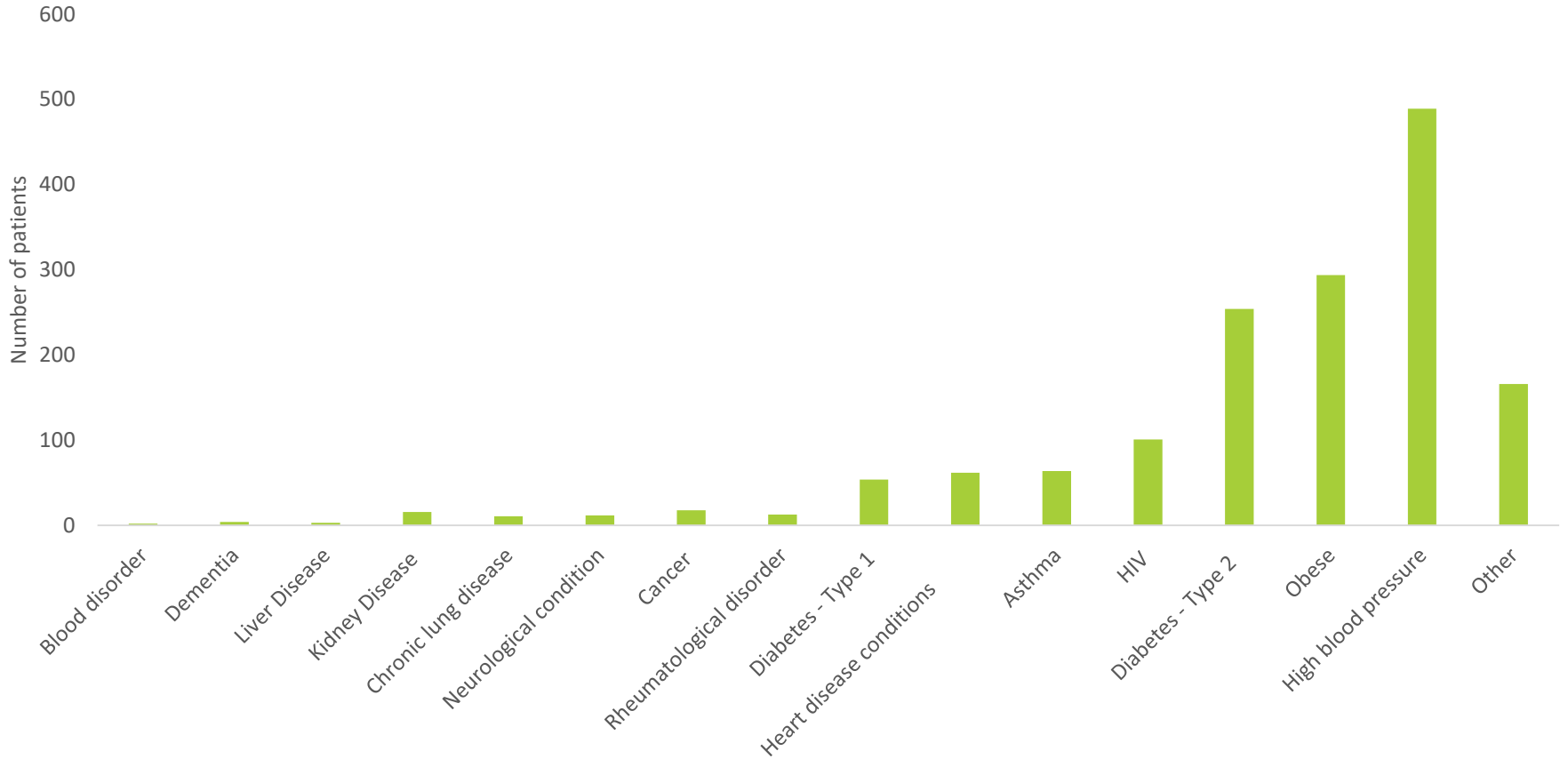
- **Study Design:** *Quantitative Longitudinal Cohort*
- **Objectives:**
 - *Characterize physical and psychosocial consequences in patients post-COVID-19 infection.*
 - *Estimating the risk factors for post-COVID-19 medical sequelae, psychosocial consequences and post COVID-19 mortality.*
- **Ethics:** *Wits HREC Approval Number M201150*
- **Funding:** *Bill and Melinda Gates Foundation*
- **Sampling:** *SARS-CoV-2 patients post-hospitalisation*
- **Methodology:**
 - *1, 3, 6 and 12 month follow up*
 - *15-20 min telephonic interview*



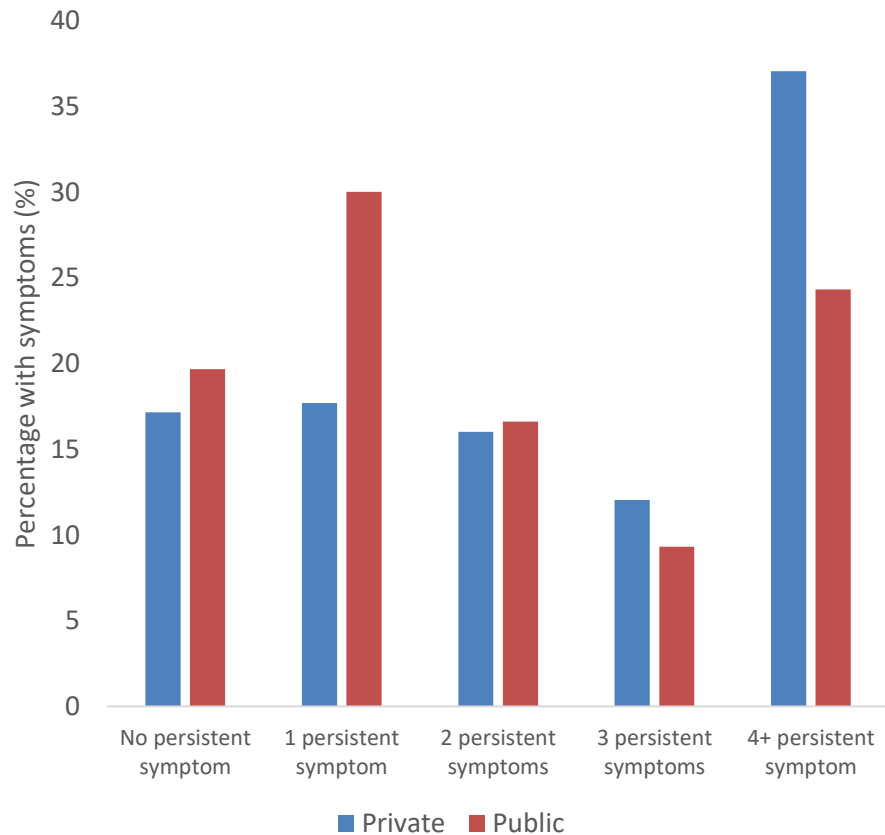
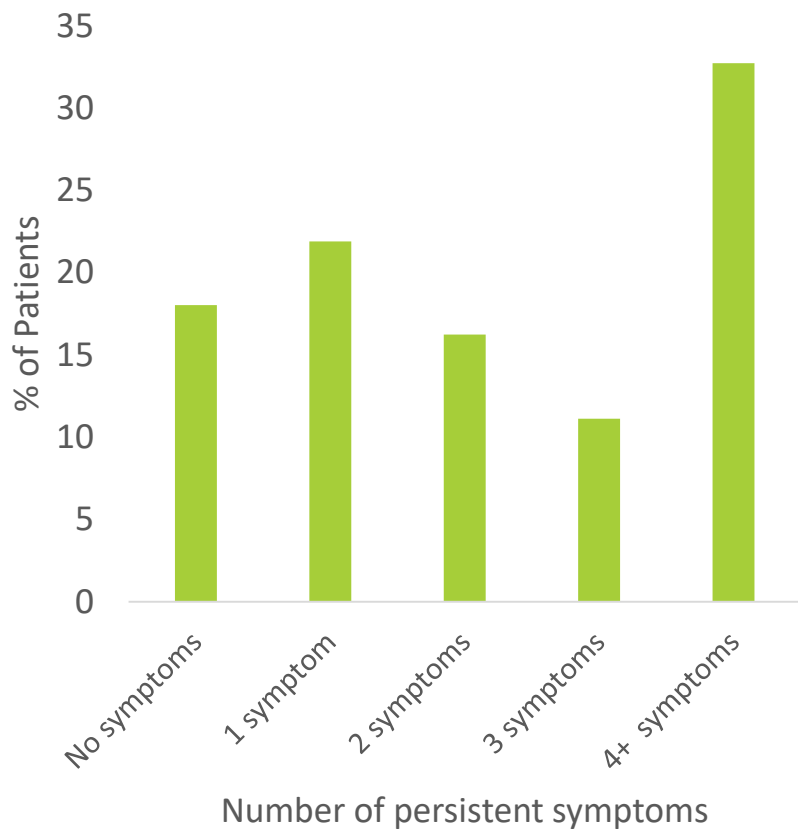
Participant Characteristics

Characteristics	Female	Male	Total N=1448
	784 (54.14%)	664 (45.86%)	1448
Median age (IQR)	50 [38 - 60]	52.5 [43 - 62]	51 [40 - 61]
Age group			
<40 years	223 (28.4)	126 (18.9)	349 (24.1)
40-64 years	445 (56.8)	412 (62.1)	857 (59.2)
≥65 years	115 (14.7)	126 (19.0)	241 (16.6)
Unknown	1 (0.1)	0	1 (0.1)
Race			
White	139 (17.7)	182 (27.4)	321 (22.2)
Black	516 (56.8)	350 (52.7)	866 (59.8)
Mixed race	60 (7.7)	59 (8.9)	119 (8.2)
Indian	51 (6.5)	45 (6.8)	96 (6.6)
Other/Asian	2 (0.3)	0	2 (0.1)
Unknown	16 (2.0)	28 (4.2)	44 (3.0)
Number of Comorbidities			
No Comorbidities	272 (34.7)	244 (36.8)	516 (35.6)
1 Comorbidity	260 (33.2)	230 (34.6)	490 (33.8)
2 Comorbidities	185 (23.6)	115 (17.3)	300 (20.7)
≥ 3 Comorbidities	67 (8.6)	75 (11.3)	142 (9.8)
Ever ICU	198 (25.3)	208 (31.3)	406 (28.0)
Ever Oxygen	416 (53.1)	379 (57.1)	795 (54.9)
Ever Ventilated	35 (4.5)	50 (7.5)	85 (5.9)

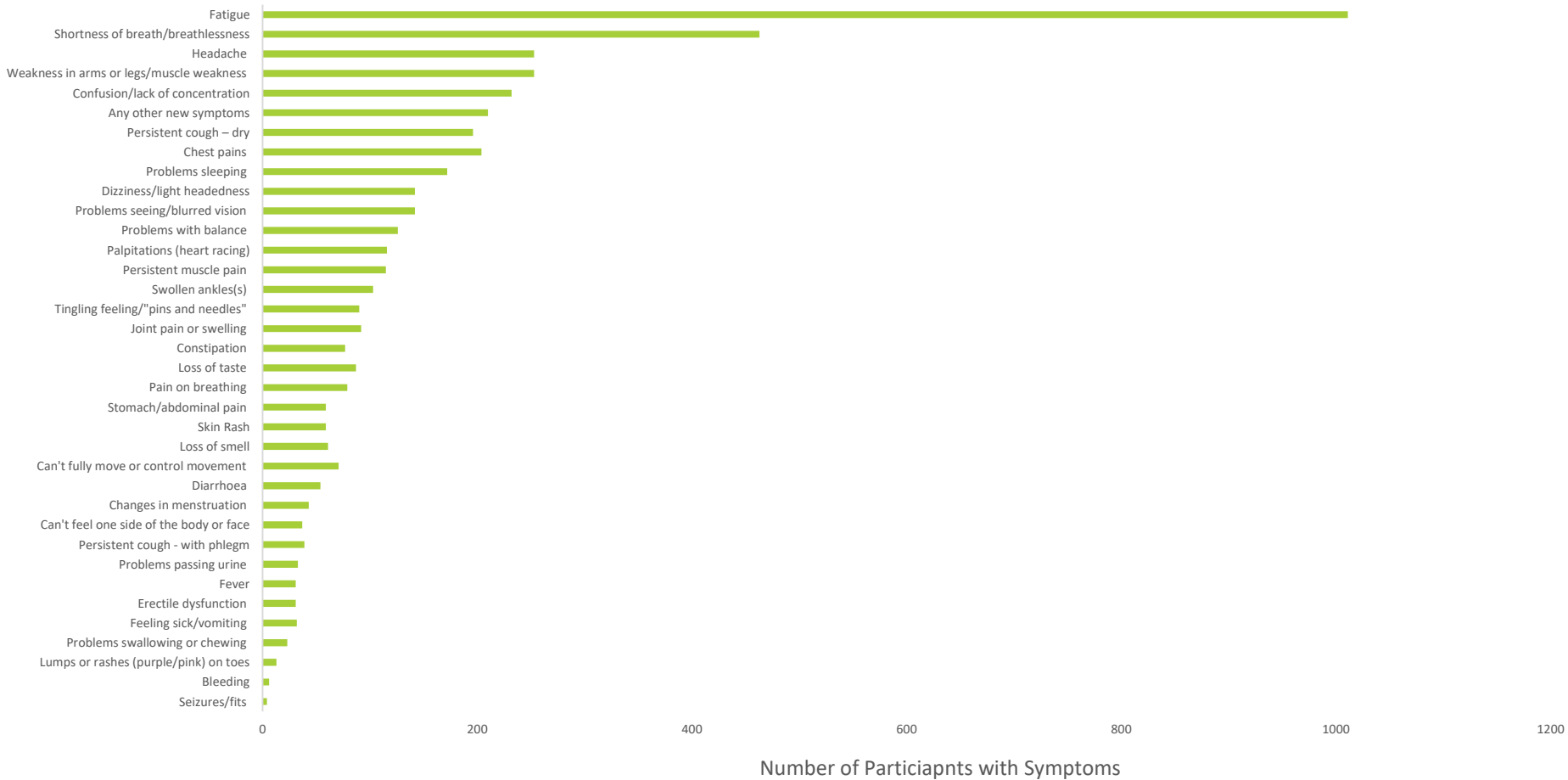
Prevalence of Comorbidities (N=1448)



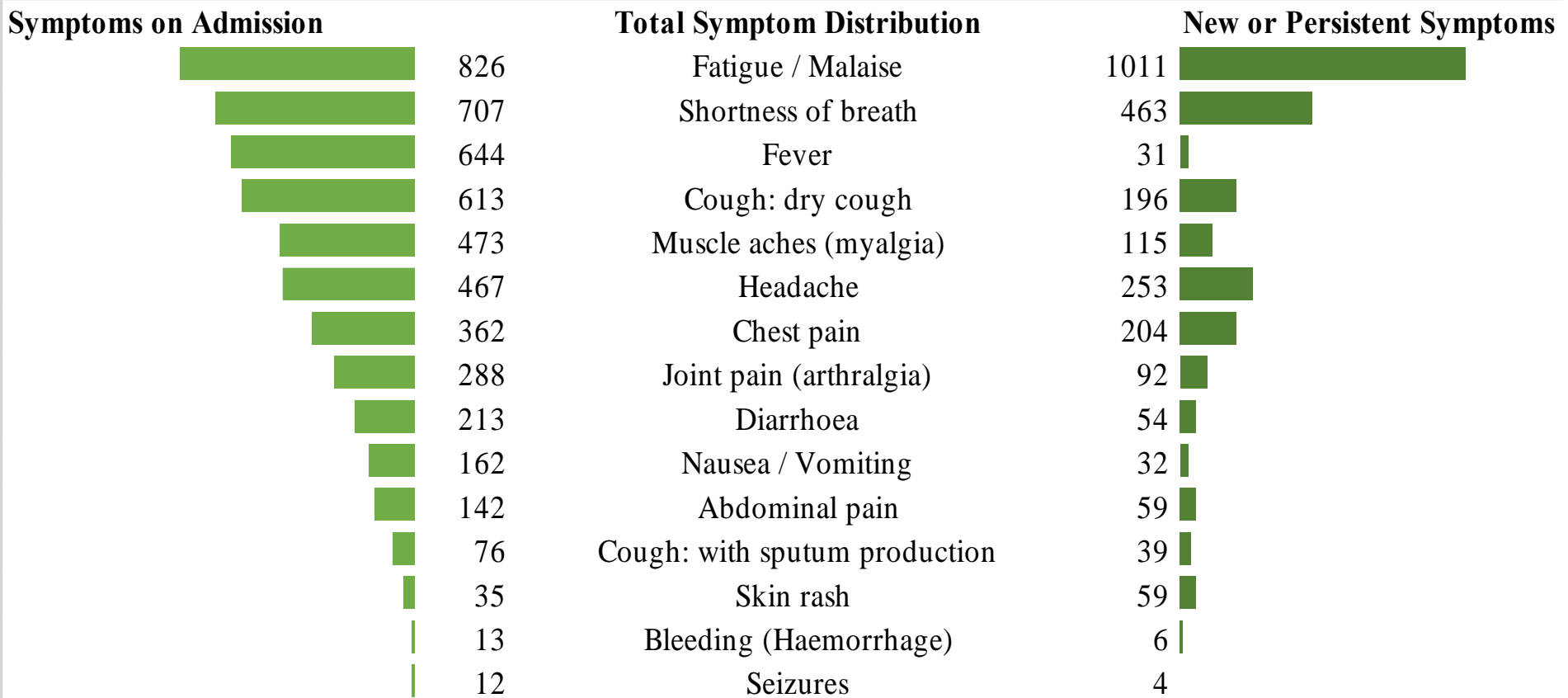
Persistent Symptoms at one month (N=1448)



Persistent Symptoms at one month (N=1448)



Symptoms on Admission Versus Persistent Symptoms(N=1448)



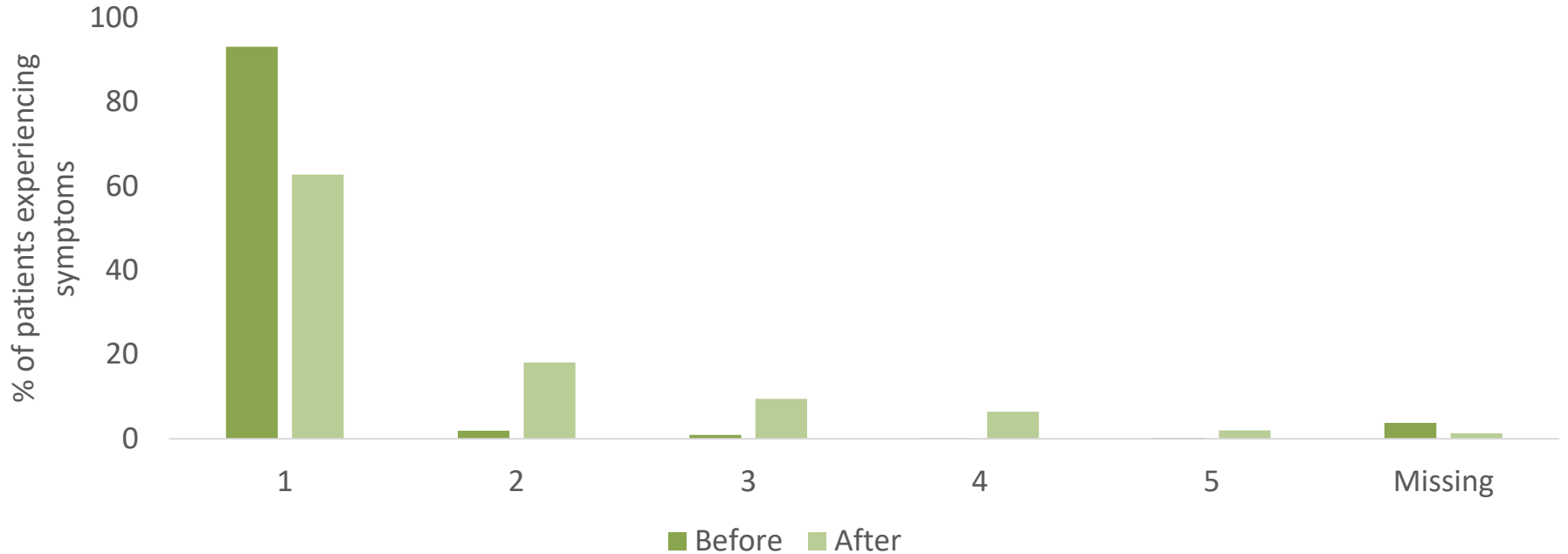
Symptoms on Admission Versus Persistent Symptoms(N=1448)

Symptoms on Admission	Total Symptom Distribution	New or Persistent Symptoms
299	Sore Throat	
164	Runny nose (Rhinorrhoea)	
136	Inability to walk	
102	Altered consciousness	
94	Wheezing	
42	Conjunctivitis	
34	Lower chest wall in drawing	
21	Lymphadenopathy	
13	Skin ulcers	
12	Cough: with haemoptysis	
	Weakness in arms or legs/muscle weakness	253
	Confusion/lack of concentration	232
	Any other new symptoms	210
	Problems sleeping	172
	Dizziness/light headedness	142
	Problems seeing/blurred vision	142
	Problems with balance	126
	Palpitations (heart racing)	116
	Swollen ankles(s)	103
	Tingling feeling/"pins and needles"	90
	Loss of taste	87
	Pain on breathing	79
	Constipation	77
	Can't fully move or control movement	71
	Loss of smell	61
	Changes in menstruation	43
	Can't feel one side of the body or face	37
	Problems passing urine	33
	Erectile dysfunction	31
	Problems swallowing or chewing	23
	Lumps or rashes (purple/pink) on toes	13

Severe complications by Sex (N=1448)

Disease	Diagnosis after COVID Diagnosis		
	Female n=784 (54.1%)	Male n=664 (45.9%)	Total N= 1 448
Heart Attack	8 (1.0%)	2 (0.3%)	10 (0.7%)
Deep vein thrombosis (DVT)	4(0.5%)	2 (0.3%)	6 (0.4%)
Stroke or mini stroke/TIA	6 (0.8%)	2 (0.3%)	8 (0.6%)
Pulmonary embolism (PE)	9 (1.2%)	7 (1.1%)	16 (1.1%)
Kidney problems	13 (1.7%)	17 (2.6%)	30 (2.1%)

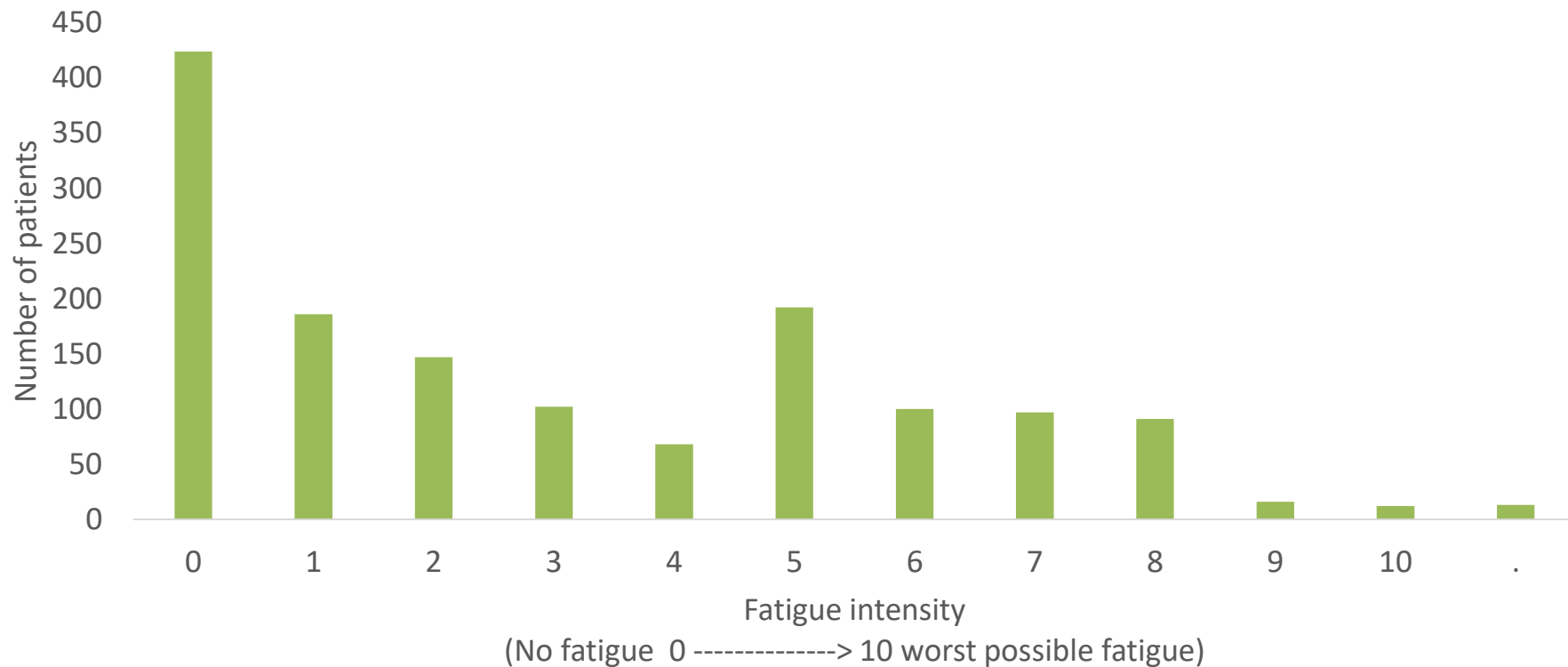
Shortness of Breath (N=1448)



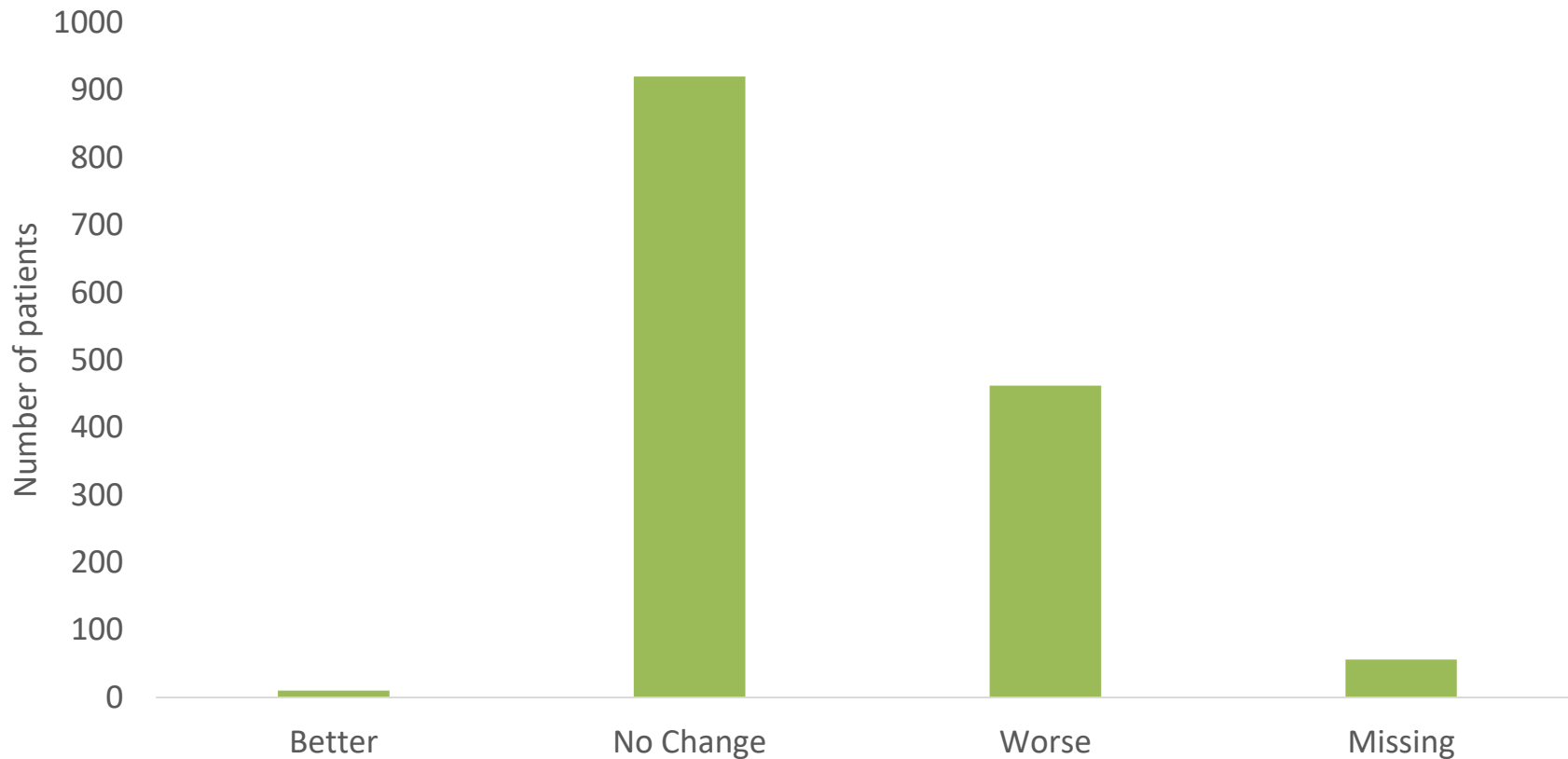
Key

- 1 - Not troubled by breathlessness except on strenuous exercise
- 2 - Short of breath when hurrying or when walking up a slight hill
- 3 - Walked slower than most people of my age because of breathlessness, or had to stop for breath when walking at own pace
- 4 - Stopped for breath after walking 100 yards/ 90-100 meters, or after a few minutes on level ground
- 5 - Too breathless to leave the house, or breathless when dressing/undressing

Fatigue Intensity among patients reporting Fatigue (n=1448)

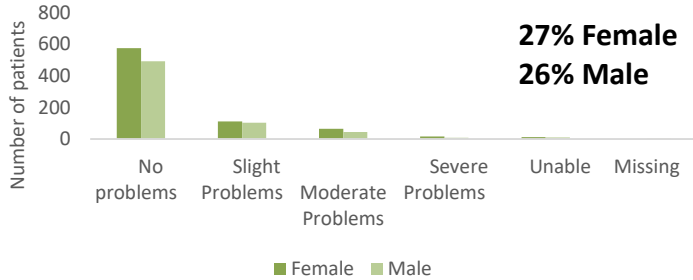


Changes in Breathlessness/Fatigue (N=1448)

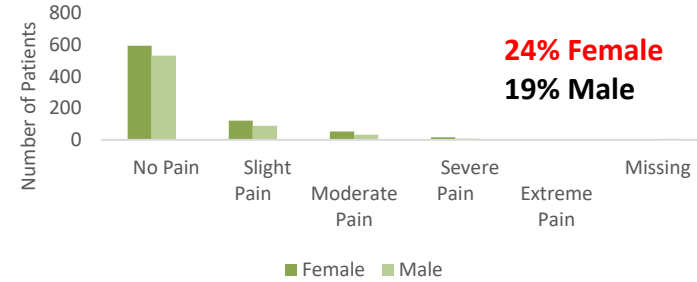


Difficulties with Activities of Daily Living by Sex (N=1448)

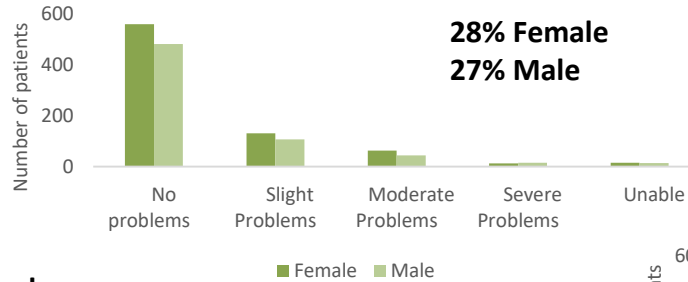
Mobility



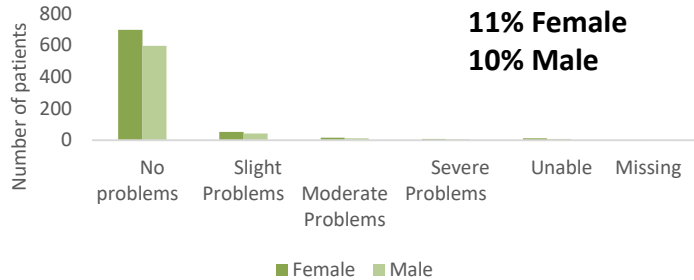
Pain/ Discomfort



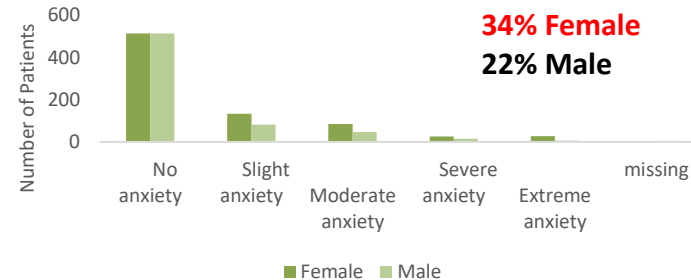
Usual Activity



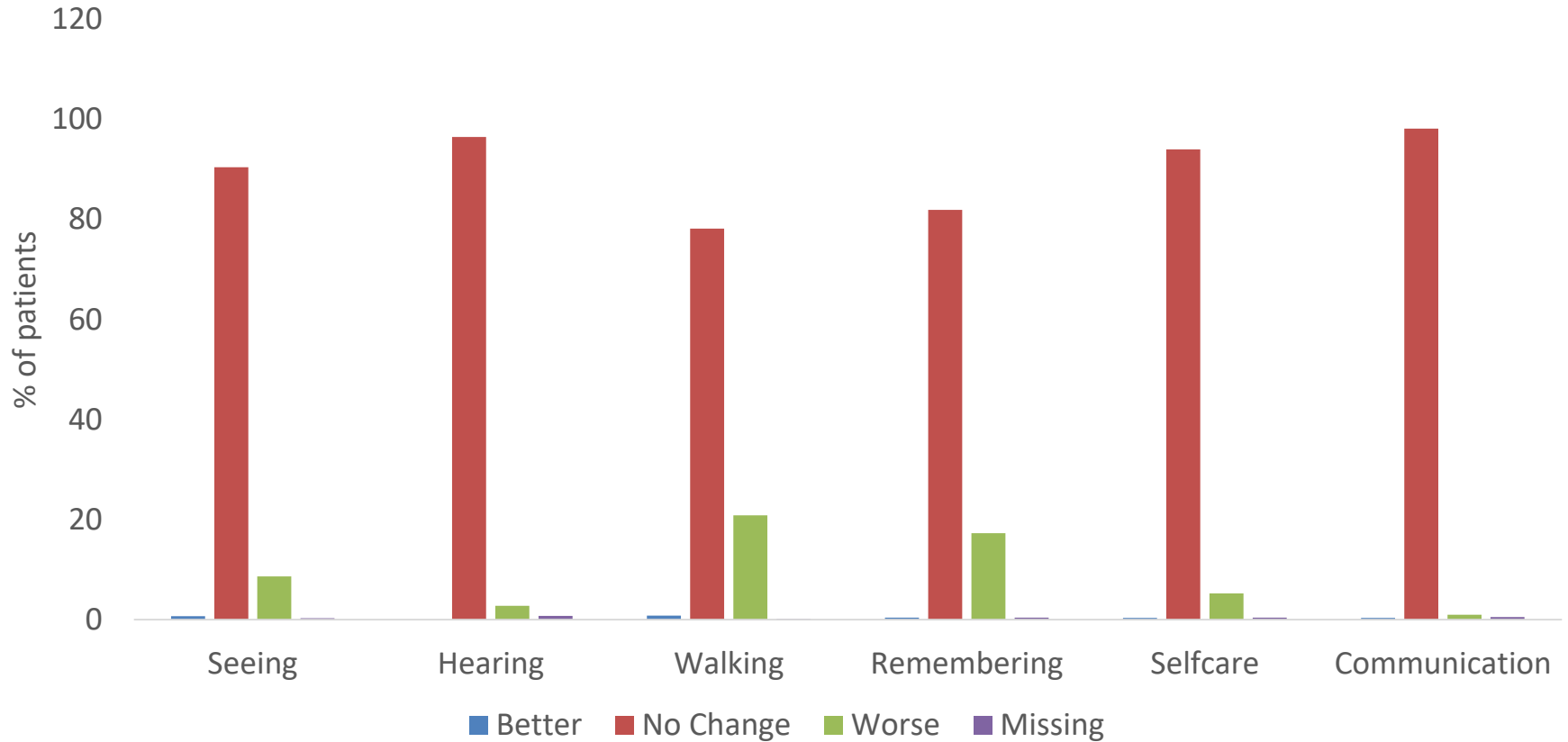
Self Care



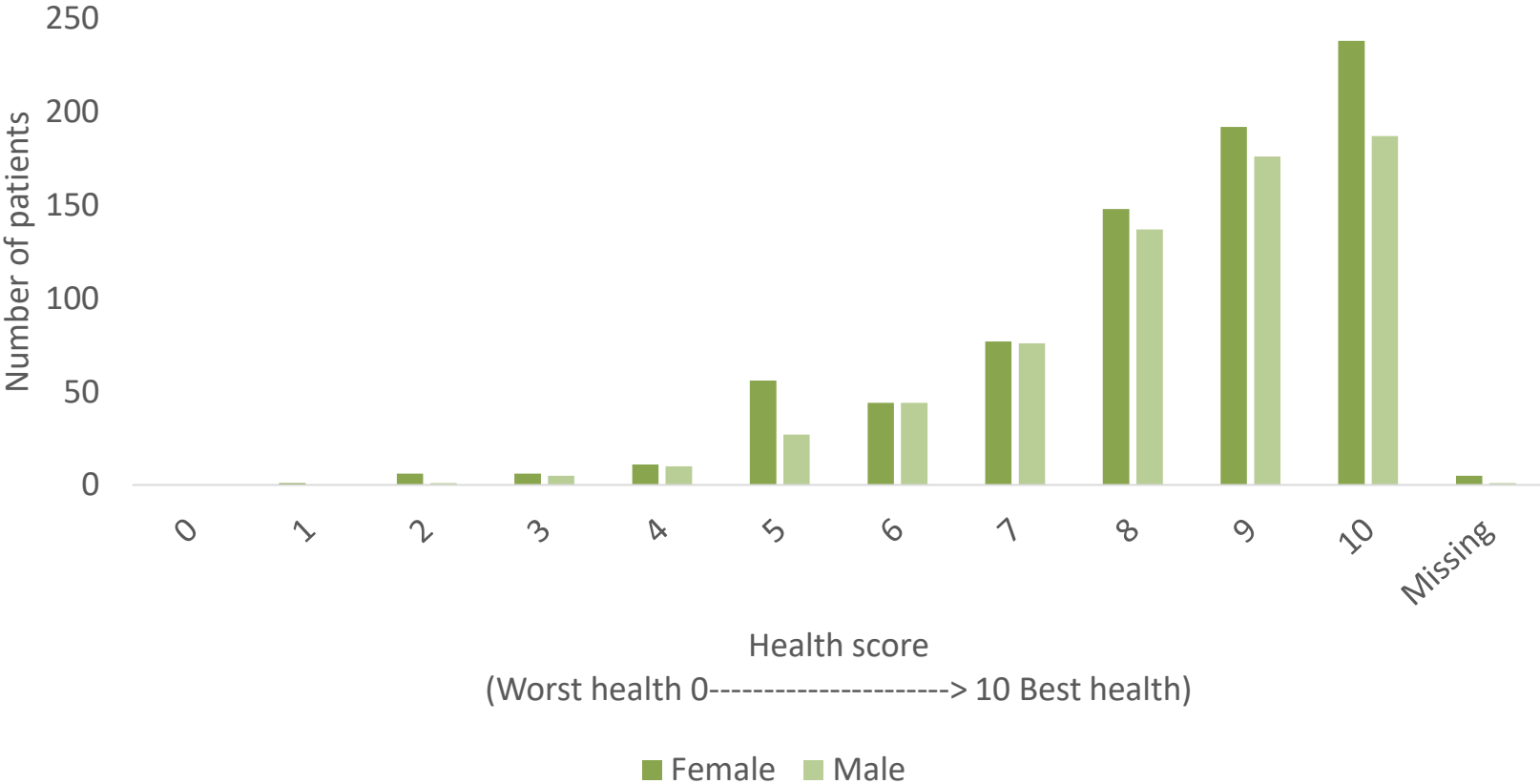
Anxiety/ Depression



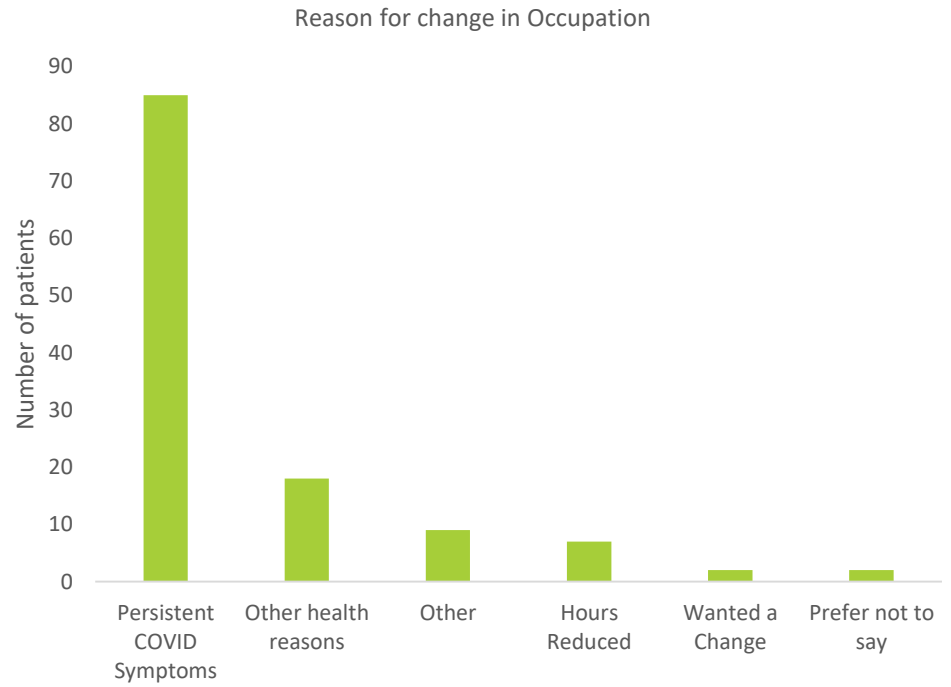
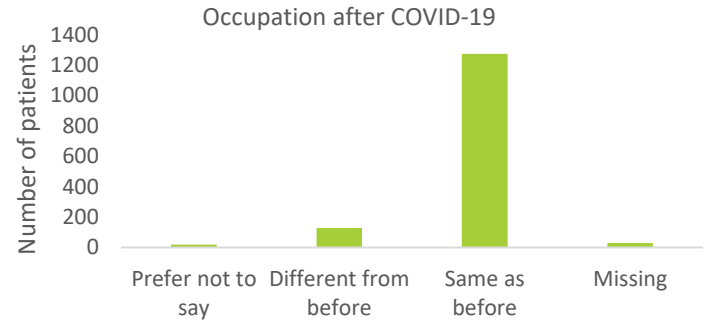
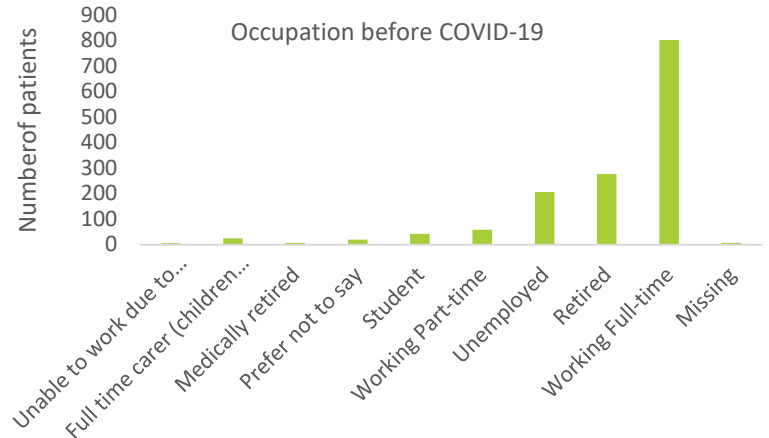
Changes in Activities of Daily Living (N=1448)



Self Perceived Health Score (N=1448)



Occupation before and after COVID-19 (N=1448)



70% of patients who changed occupation following Acute COVID illness reported that the reason for the change was due to persistent COVID Symptoms

Lifestyle changes (N=1448)

	Smoking	Drinking alcohol	Eating healthy food	Physical activity
I do this more often	19 (1.3%)	17 (1.2%)	769 (53.1%)	331 (22.9%)
I do this less often	57 (4.0%)	293 (20.2%)	86 (5.9%)	486 (33.6%)
No difference	235 (16.2%)	319 (22.0%)	583 (40.3%)	609 (42.1%)
I did not do this before COVID-19	1133 (78.3%)	812 (56.1%)	-	-
Missing	4 (0.3%)	7 (0.5%)	10 (0.7%)	22 (1.5%)

Reported Persistent Symptoms

Female

No Cormobidities
< 40 years
40-64 years
≥65 years

≥ 1 Comorbidities
< 40 years
40-64 years
≥65 years

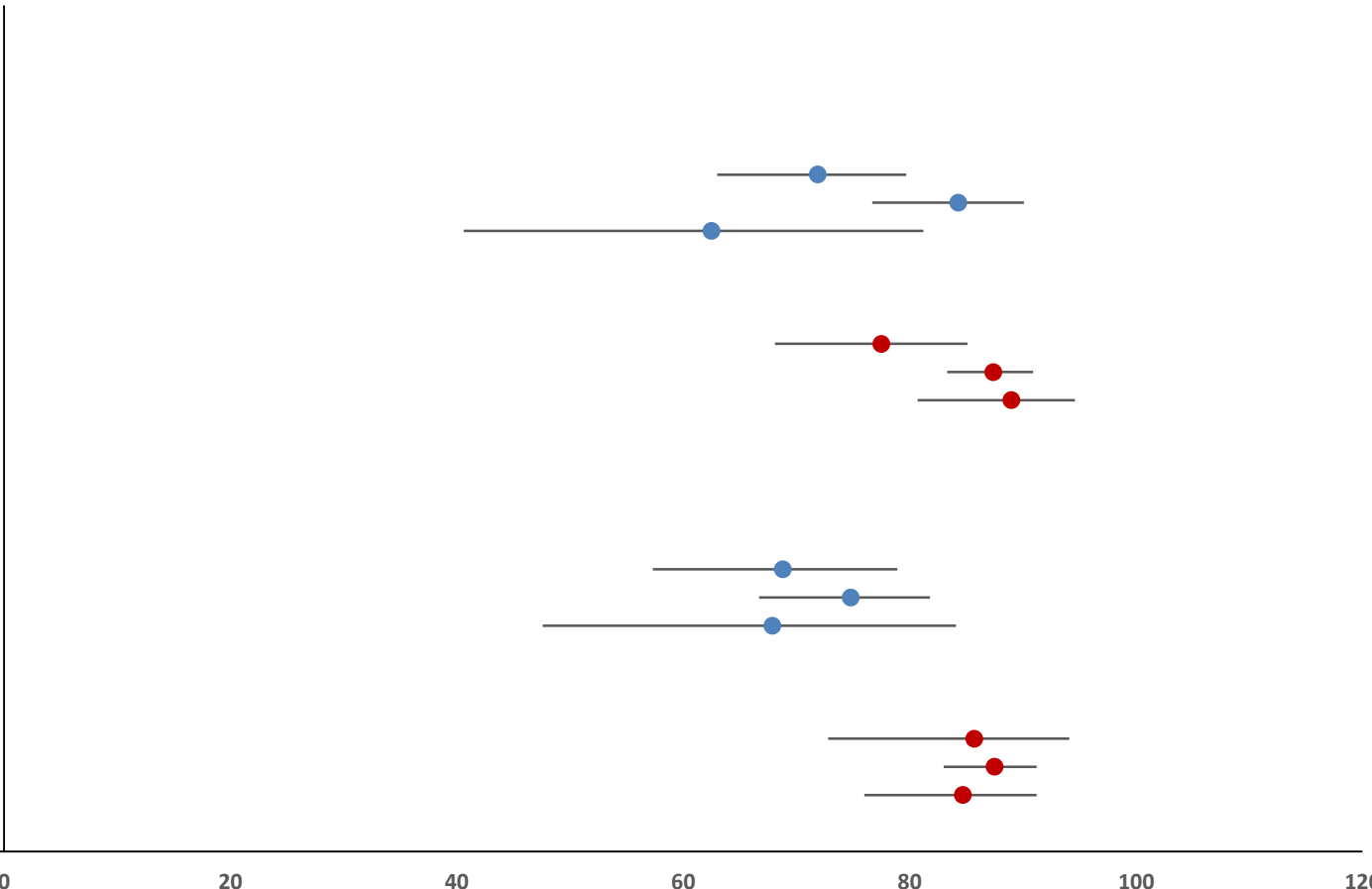
Male

No Cormobidities
< 40 years
40-64 years
≥65 years

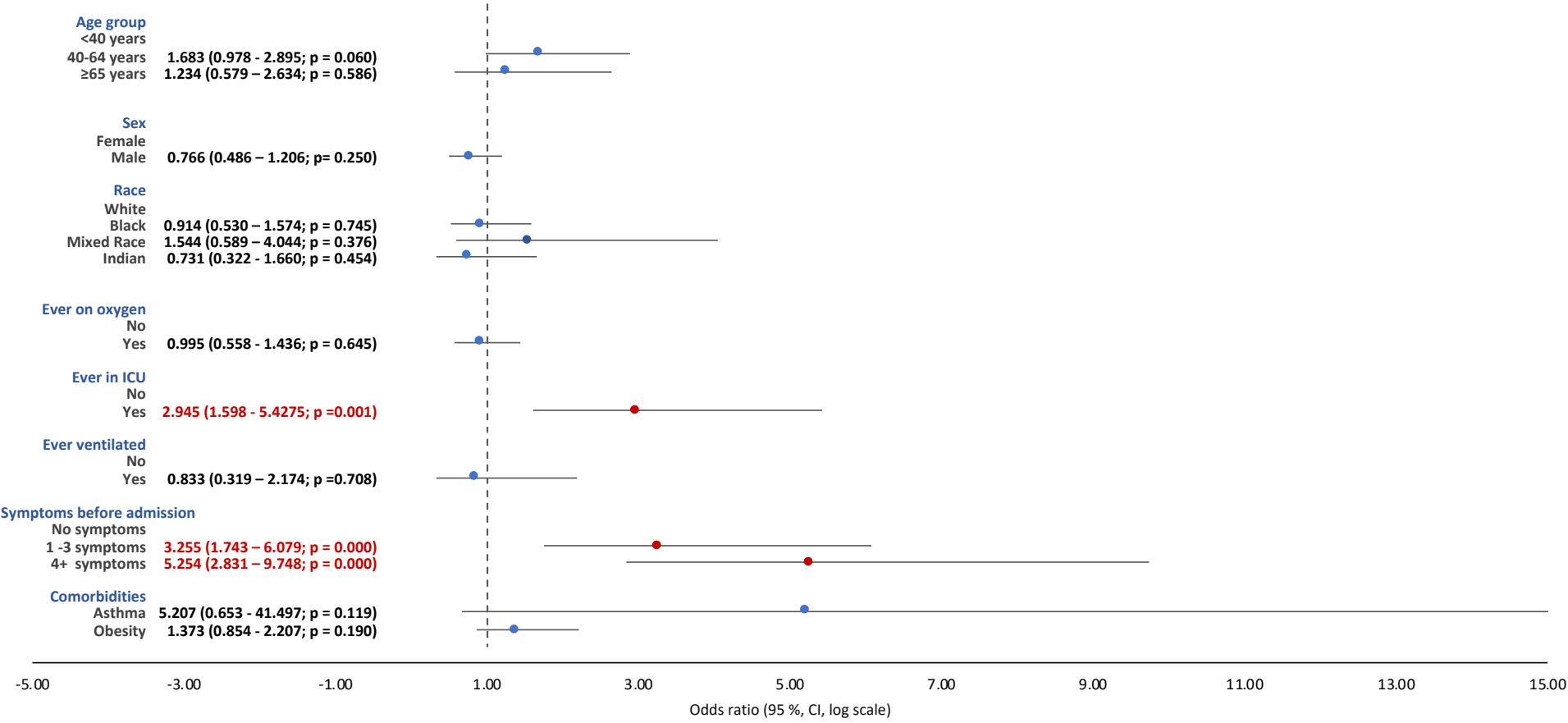
≥ 1 Comorbidities
< 40 years
40-64 years
≥65 years

-40 -20 0 20 40 60 80 100 120

Proportion with at least one persistent reported symptom (%)

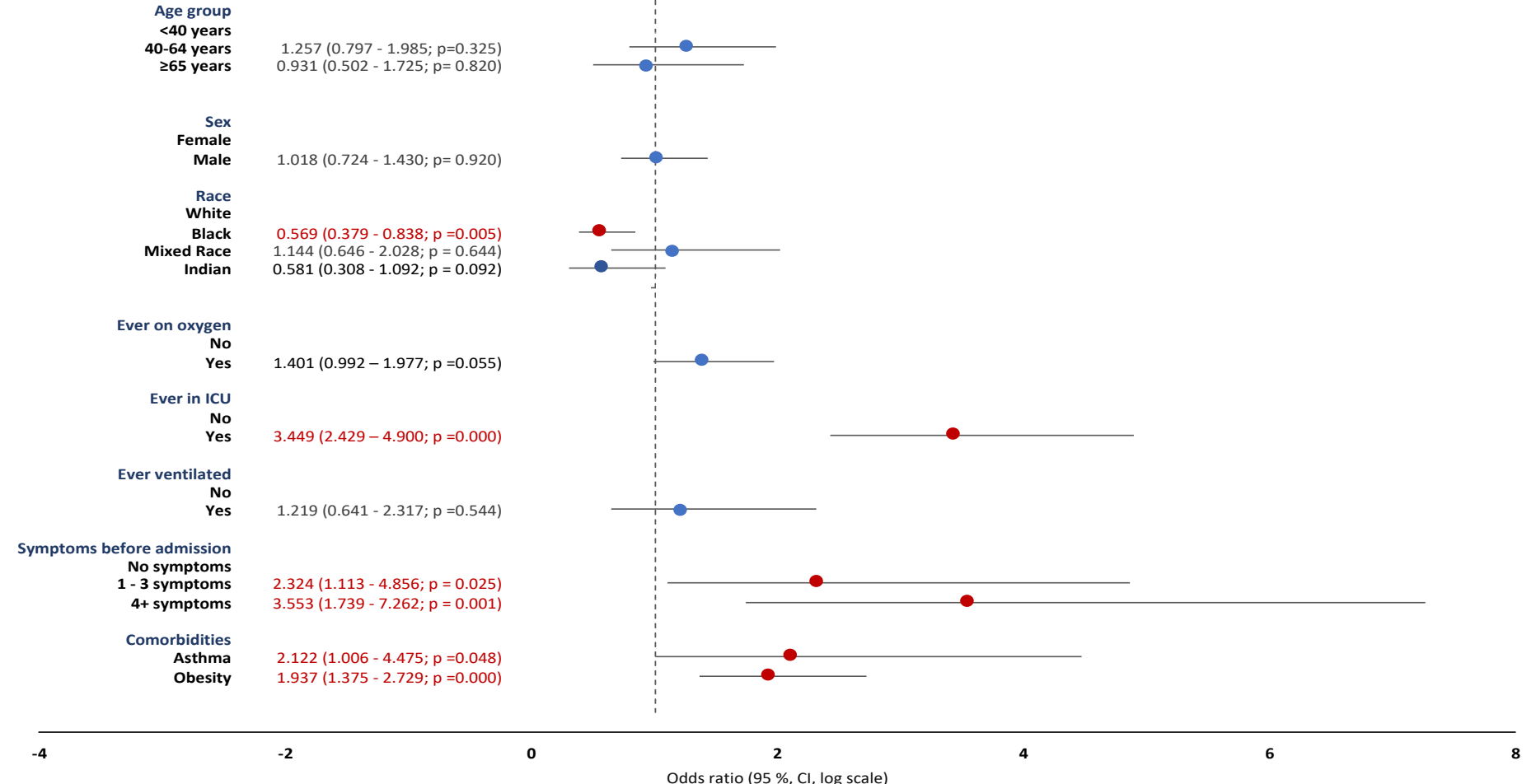


New or persistent symptoms after COVID-19: aOR (95% CI, p-value)





Breathlessness after COVID-19: aOR (95% CI, p-value)



Self Reported Non-Recovery after COVID-19: aOR (95% CI, p-value)

Age group

<40 years	
40-64 years	1.210 (0.701- 2.088; p = 0.493)
≥65 years	0.682 (0.312 - 1.489; p = 0.336)

Sex

Female	
Male	1.133 (0.756 - 1.700; p= 0.545)

Race

White	
Black	0.489 (0.304 - 0.787; p = 0.003)
Mixed Race	0.580 (0.282 - 1.189; p = 0.137)
Indian	1.663 (0.880 - 3.143; p = 0.117)

Ever on oxygen

No	
Yes	1.149 (0.757 - 1.744; p =0.515)

Ever in ICU

No	
Yes	1.327 (0.845 - 1.961; p = 0.239)

Ever ventilated

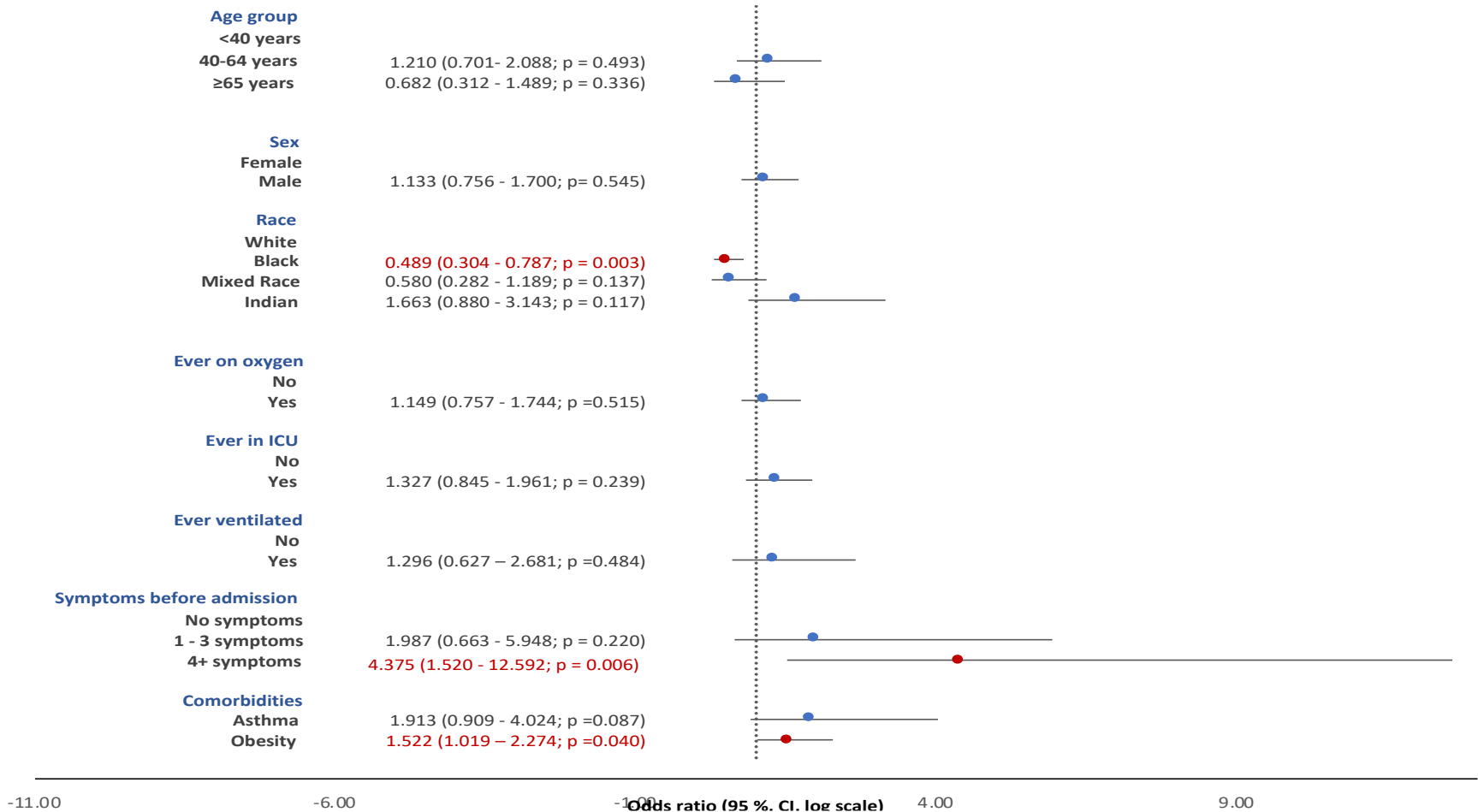
No	
Yes	1.296 (0.627 – 2.681; p =0.484)

Symptoms before admission

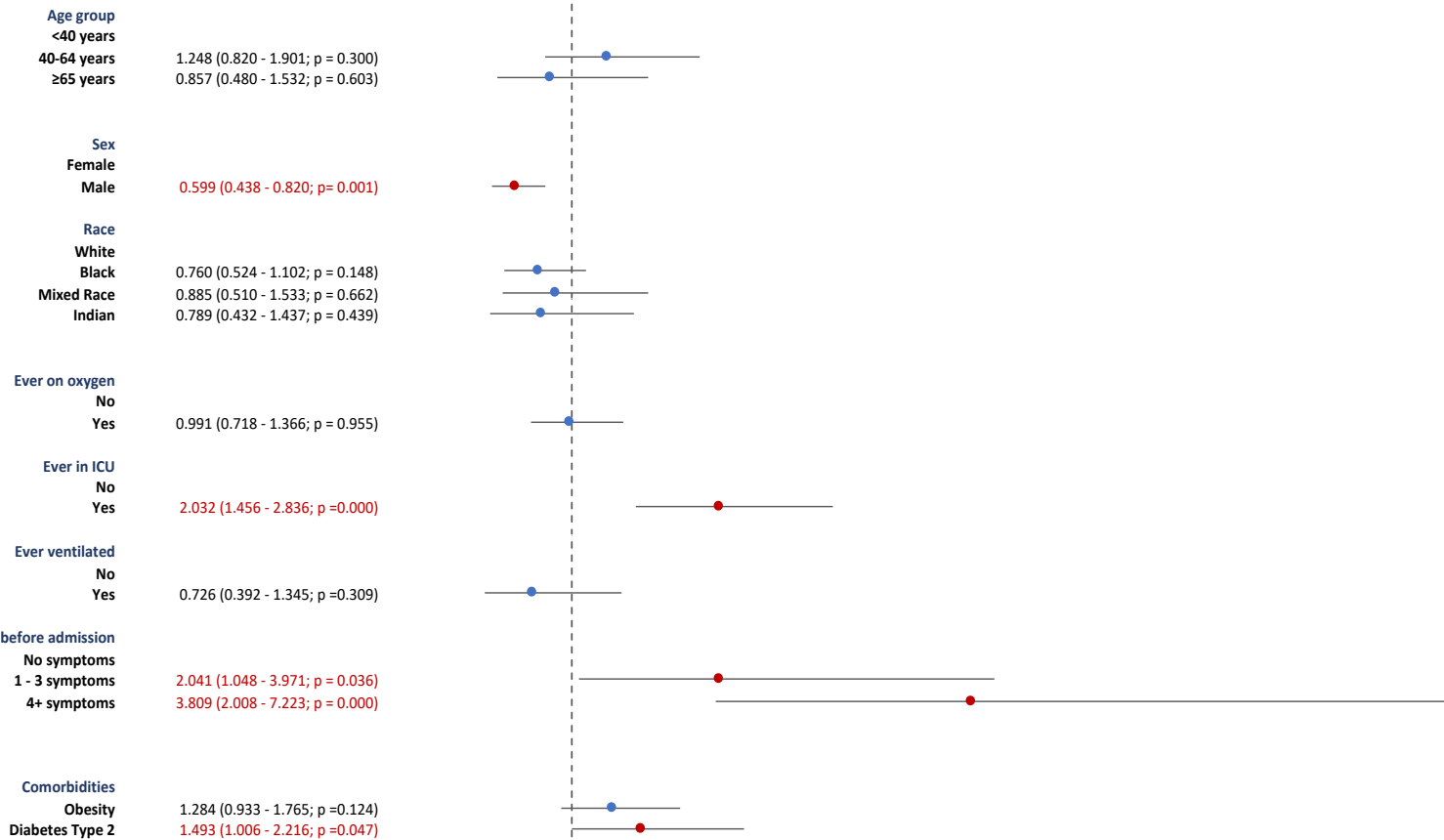
No symptoms	
1 - 3 symptoms	1.987 (0.663 - 5.948; p = 0.220)
4+ symptoms	4.375 (1.520 - 12.592; p = 0.006)

Comorbidities

Asthma	1.913 (0.909 - 4.024; p =0.087)
Obesity	1.522 (1.019 – 2.274; p =0.040)



Disability after COVID-19: aOR (95% CI, p-value)



-4.0

-2.0

0.0

2.0

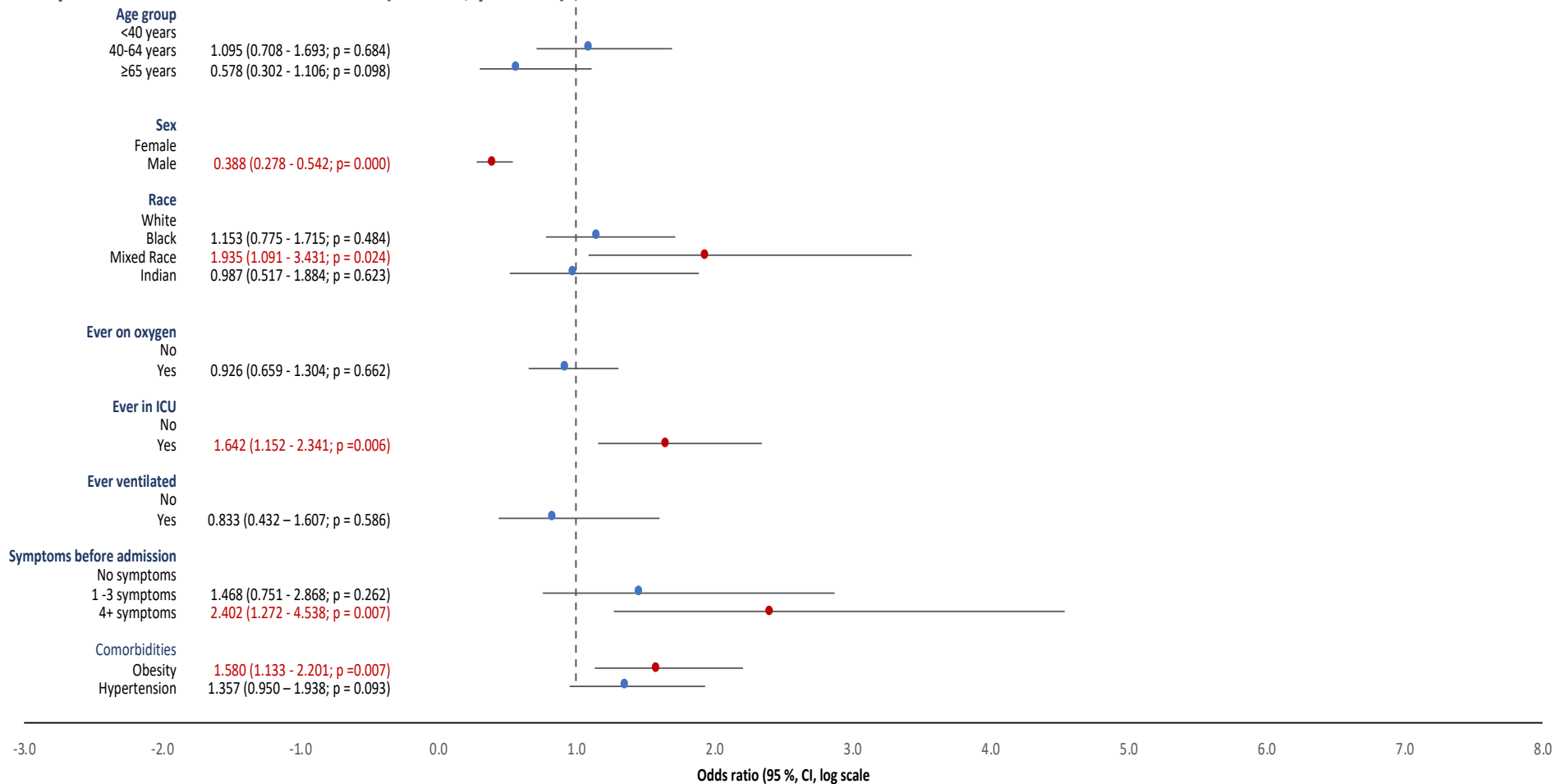
4.0

6.0

8.0

Odds ratio (95 % CI, log scale)

Depression after COVID-19: aOR (95% CI, p-value)





Discussion

Limitations

- Selection bias
 - Private sector - availability of contact details
 - Response & Non-Response Bias
 - Sick patients participate
 - Healthy patients refuse
- Participants with mild disease not hospitalized, not sampled
- Lack of non-SARS-CoV-2 controls

What next...

- Study
 - Include non-hospitalized patients
 - Include Paediatric cohort
 - Include non-SARS-CoV-2 (?family/ ILI) controls
- Government response
 - Patient messaging
 - Guidelines and HCW training
 - Health services planning
 - Occupational Health Services & Implications

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