

COVID-19 SENTINEL HOSPITAL SURVEILLANCE UPDATE

SOUTH AFRICA WEEK 23 2020

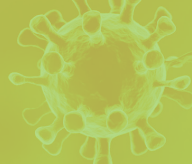
OVERVIEW

This report summarises data of COVID-19 cases admitted to sentinel hospital surveillance sites in all provinces. The report is based on data collected from 5 March to 7 June 2020.

HIGHLIGHTS

- As of 7 June, 6 353 COVID-19 admissions were reported from 242 facilities (64 public-sector and 178 private-sector) in all nine provinces of South Africa. There was an increase of 1635 new admissions since the last report, and 24 additional hospitals (7 public-sector and 17 private-sector) reporting COVID-19 admissions. There were 2990 (47%) and 3363 (53%) admissions reported in private and public sector respectively. The majority of COVID-19 admissions were reported from four provinces, 4 246 (67%) in Western Cape, 719 (11%) in Gauteng, 547 (9%) in Eastern Cape and 492 (8%) in KwaZulu-Natal.
- The median age of COVID-19 admissions was 49 years; 250 (4%) admissions in patients <20 years and 821 (13%) in >70 years. Fifty four percent (3426/6353) were female.
- Among 4989 (79%) patients with data on comorbid conditions; 1648 (33%) had one comorbid condition and 1790 (36%) had two or more comorbid conditions. Most commonly reported comorbid conditions were hypertension 2049/3438 (60%) and diabetes 1667/3438 (49%). There were 618 (18%) patients admitted with HIV, 134 (4%) with active tuberculosis and 333 (10%) patients with previous history of TB. There were 101 patients who were reported to be obese.
- Of the 6 353 admissions, 1974 (31%) patients were in hospital at the time of this report, 3525 (56%) patients were discharged alive or transferred out and 854 (13%) patients had died. There were 246 additional deaths since the last report.
- On multivariable analysis, factors associated with in-hospital mortality were older age groups, 40-64 years (438/3105, case fatality ratio 14%; aOR 3.5; 95% CI 2.6-4.9) and ≥65 years (353/1234, 29%; aOR 7.2; 95% CI 5.1-10.1) as compared to <40 years (61/1952, 3%); male sex (439/2 927, 15%; aOR 1.5; 95% CI 1.3-1.8); admitted in the public sector (584/3 363, 17%; aOR 1.7; 95% CI 1.4-2.1); and having comorbid hypertension (468/2049, 23%; aOR 1.5; 95% CI 1.2-1.8), diabetes (408/1667, 25%; aOR 1.6; 95% CI 1.3-1.9), chronic renal disease (104/239, 44%; aOR 2.6; 95% CI 1.9-3.5), malignancy (16/47, 34%; aOR 4.1; 95% CI 2.1-8.0) and HIV (99/618, 16%; aOR 1.4; 95% CI 1.04-1.8).
- Patients who died were less likely to be admitted in Free State Province (8/133, 6%; aOR 0.4; 95% CI 0.2-0.9), Gauteng Province (31/719, 4%; aOR 0.4; 95% CI 0.2-0.6) or North West Province (4/156, 3%; aOR 0.3; 95% CI 0.1-0.9) as compared to the Eastern Cape Province (78/547, 14%).

METHODS



DATCOV19, sentinel hospital surveillance for COVID-19 admissions, was initiated on the 1 April 2020. Data are submitted by public and private hospitals that have agreed to report COVID-19 admissions through DATCOV19 surveillance in all nine provinces of South Africa. A COVID-19 case was defined as a person with a positive reverse transcriptase polymerase chain reaction (RT-PCR) assay for SARS-CoV-2 who was admitted to a DATCOV19 sentinel hospital. An individual was defined as having severe disease if treated in high care or ICU, or ventilated or diagnosed with acute respiratory distress syndrome (ARDS).

Data on hospitalised cases who were diagnosed with COVID-19 from 5 March to 7 June 2020 were collected. Data are received from all private hospitals nationally, and a subset of public hospitals in all nine provinces (data are received from all public hospitals in the Western Cape (WC) Province). As of 7 June 2020, a total of 242 facilities, 64 from public sector and 178 from private sector, submitted data on hospitalised COVID-19 cases (Table 1). There were 24 additional hospitals (7 public-sector and 17 private-sector) reporting COVID-19 admissions since the last report.

Table 1: Number of hospitals reporting data on COVID-19 admissions by province and sector, South Africa, 5 March-7 June 2020

Name of province	Public Sector	Private Sector
Eastern Cape (EC)	5	11
Free State (FS)	3	8
Gauteng (GP)	4	67
KwaZulu-Natal (KZN)	4	34
Limpopo (LP)	1	4
North West (NW)	2	8
Northern Cape (NC)	1	5
Western Cape (WC)	44	36
Mpumalanga (MP)	0	5
South Africa	64	178

RESULTS

From 5 March to 7 June, a total of 6353 COVID-19 admissions (1635 additional from last report) were reported from 242 facilities in all nine provinces of South Africa. Of these admissions, 2990 (47.1%) and 3363 (52.9%) were reported in private and public sector, respectively (Figure 1). The majority of admissions (6004/6353, 94.5%) were recorded in four provinces, with the highest number (4246/6353, 66.8%) reported in Western Cape (WC), followed by (719/6353; 11.3%) in Gauteng (GP), (547/6353, 8.6%) in Eastern Cape (EC), and (492/6353, 7.7%) in KwaZulu-Natal (KZN) provinces (Figure 1).

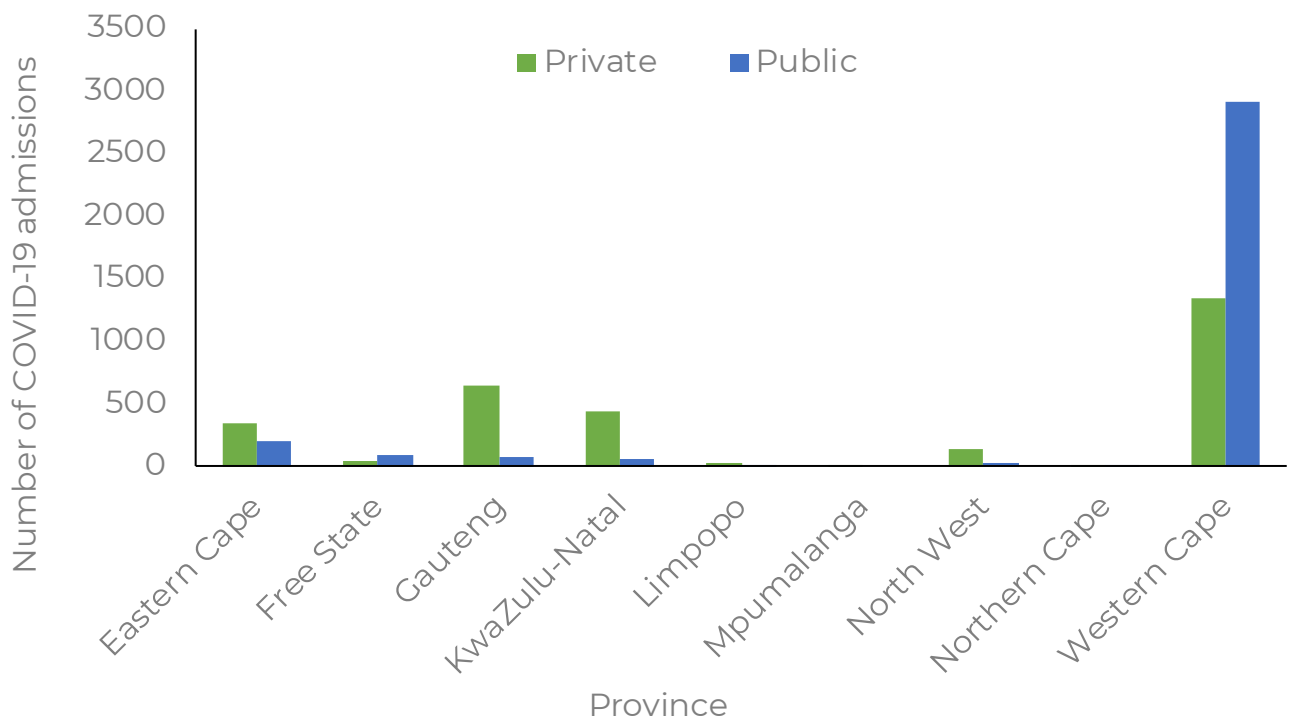
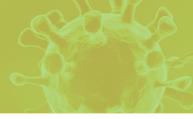


Figure 1: Number of reported COVID-19 admissions by province and health-sector, South Africa, 5 March-7 June 2020, n=6353

Initially, most reported admissions were in the private sector, however as from week 17 a higher proportion of total admissions was reported in the public sector (Figure 2).

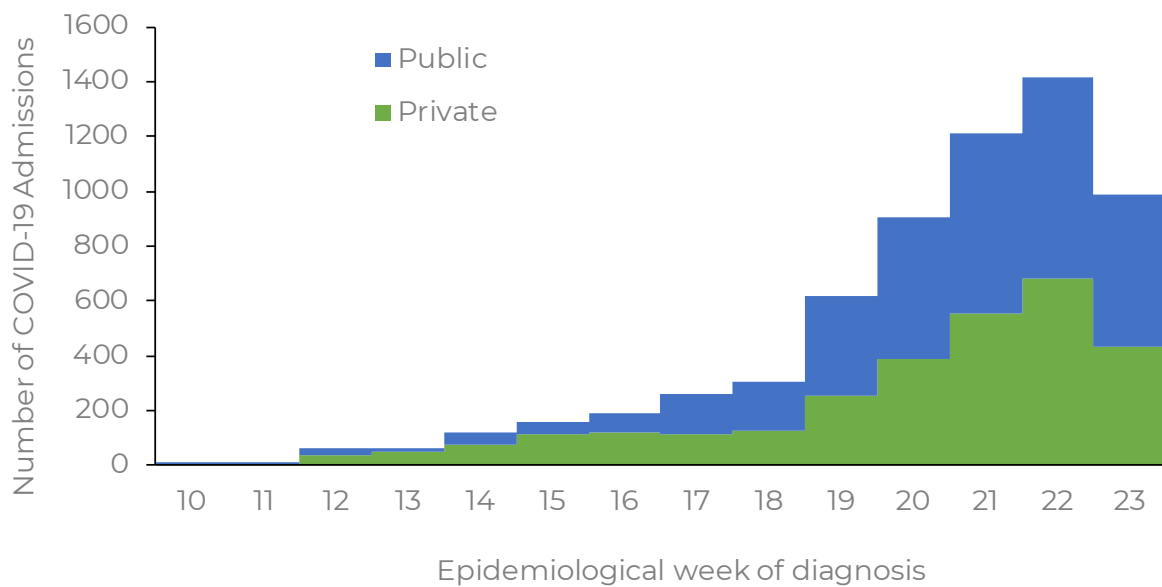


Figure 2. Number of reported COVID-19 admissions by health sector and epidemiologic week of diagnosis, 5 March-7 June 2020, n=6353

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF COVID-19 ADMISSIONS

The median age of COVID-19 admissions was 49 years (interquartile range [IQR] 36 – 61). There were 250 (3.9%) admissions in patients younger than 20 years and 821 (12.9%) in patients older than 70 years. Among admitted individuals with COVID-19, 3426 (53.9%) were female. The sex ratio varied by age group with females more common than males in all age groups except in patients younger than 10 years (Figure 3).

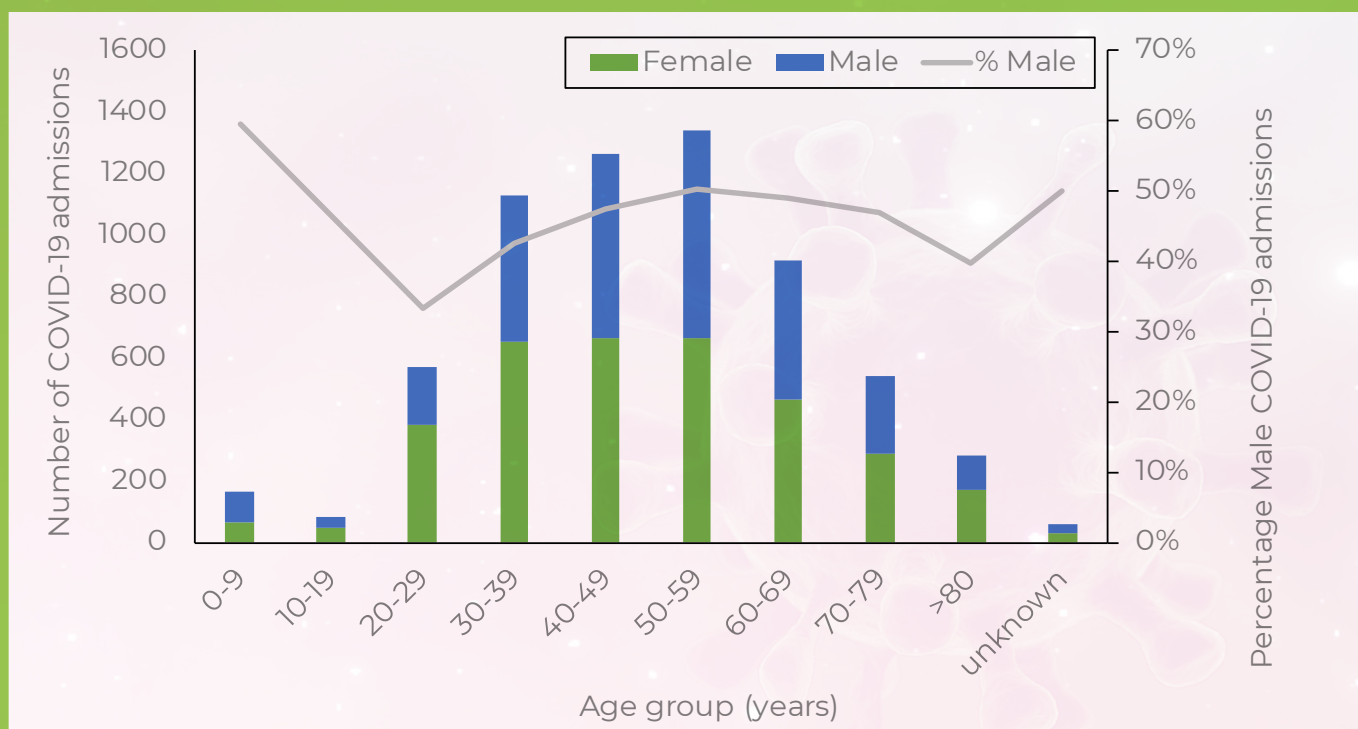


Figure 3: Number of reported COVID-19 admissions by age, gender and percentage of males, South Africa, 5 March-7 June 2020, n=6353

Of the 2899 (45.6%) patients for whom race was known, 1885 (65.0%) were Black African, 565 (19.5%) were Coloured, 155 (5.4%) were Indian and 294 (10.1%) were White. There were 215 (3.4%) health care workers (HCW) that were reported to be hospitalised. Among the 3405 female admissions, there were 278 (8.1%) females admitted who were pregnant or within 6 weeks post-partum.

Of the 4989 (78.5%) patients for whom comorbid disease was known, 1551/4989 (31.1%) had no comorbid disease reported, 1648/4989 (33.0%) had one comorbid disease reported and 1790/4989 (35.9%) had two or more comorbid diseases reported. Among the 3438 patients who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (2049/3438, 59.6%) and diabetes (1667/3438, 48.5%). There were 618/3438 (18.0%) patients who were HIV-infected, 134/3438 (3.9%) patients with active tuberculosis (TB) and 333/3438 (9.7%) patients with previous history of TB (Table 2). Obesity, while not consistently recorded for all reported COVID-19 admissions, was recorded as a risk factor in 101 patients.

Table 2: Reported comorbid diseases among COVID-19 admissions reporting at least one comorbid disease, South Africa, 5 March-7 June 2020 (n=3438)

Comorbid disease*	n	%
Hypertension	2049	59.6%
Diabetes mellitus	1 667	48.5%
Chronic cardiac disease	77	2.2%
Chronic pulmonary disease/ Asthma	553	16.1%
Chronic renal disease	239	7.0%
Malignancy	47	1.4%
HIV	618	18.0%
Active TB	134	3.9%
Previous history of TB	276	11.4%

* Multiple comorbid conditions would be counted more than once so the total number may be more than the total number of individuals reporting comorbid conditions

SEVERITY

Of the 6353 COVID-19 admissions to date, 1378 (21.7%) met the criteria for severe disease. The median age of patients who had severe disease was 53 (IQR 44 – 64) years; compared to 47 (IQR 35 – 60) years for those who did not have severe disease. Amongst all reported admissions, 829 (13.1%) patients were treated in ICU and 653 (10.3%) were treated in High Care; 430 (6.8%) were ventilated and 1194 (18.8%) received supplemental oxygen. The proportion of reported in-patients who were treated in ICU and ventilated in each epidemiological week has decreased in the past nine weeks (Figure 4).

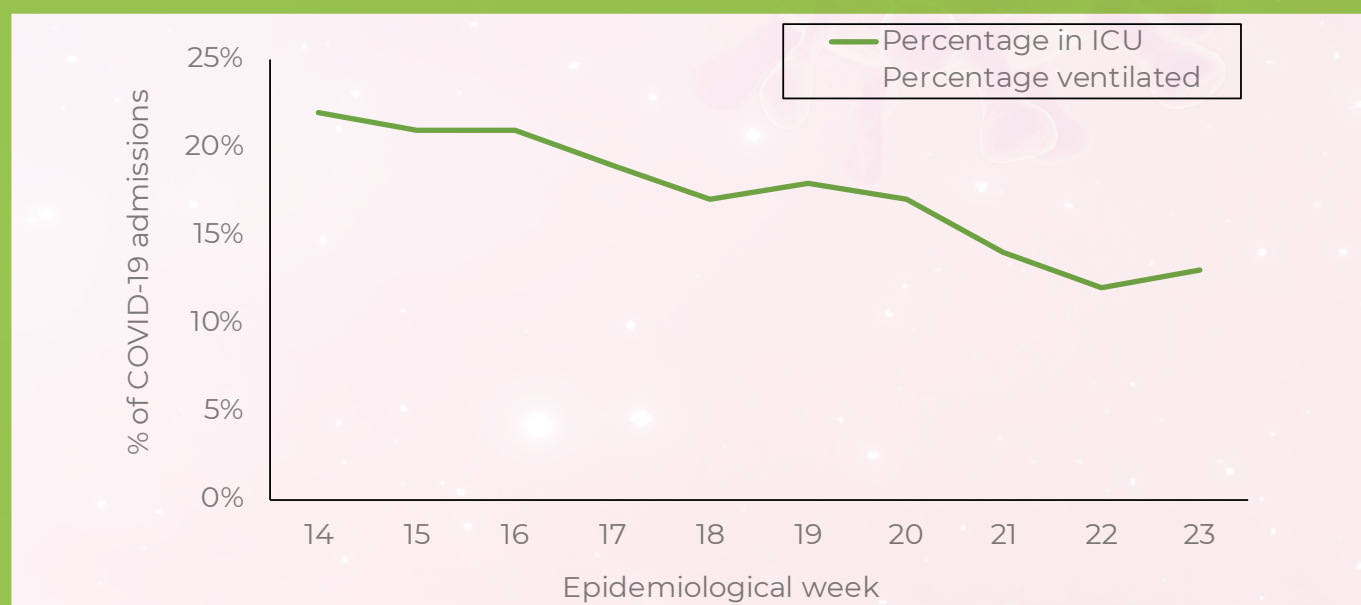


Figure 4: Proportion of COVID-19 in-patients treated in intensive care unit (ICU) and ventilated by epidemiological week, South Africa, 28 March-7 June 2020

*Data on ventilation and ICU care was not reliable prior to epidemiological week 14

OUTCOMES

Of the 6353 admitted individuals, 1974 (31.1%) were currently in hospital, 3446 (54.2%) were discharged alive, 79 (1.2%) were transferred out to either higher level care or step-down facilities and 854 (13.4%) had died.

MORTALITY

Of the 6353 COVID-19 patients admitted, 854 died, case fatality ratio (CFR) 13.4% (246 additional deaths from last report). In the first few weeks of the outbreak most deaths were reported in the private sector but since week 17 a higher proportion of reported deaths was in the public sector (Figure 5).

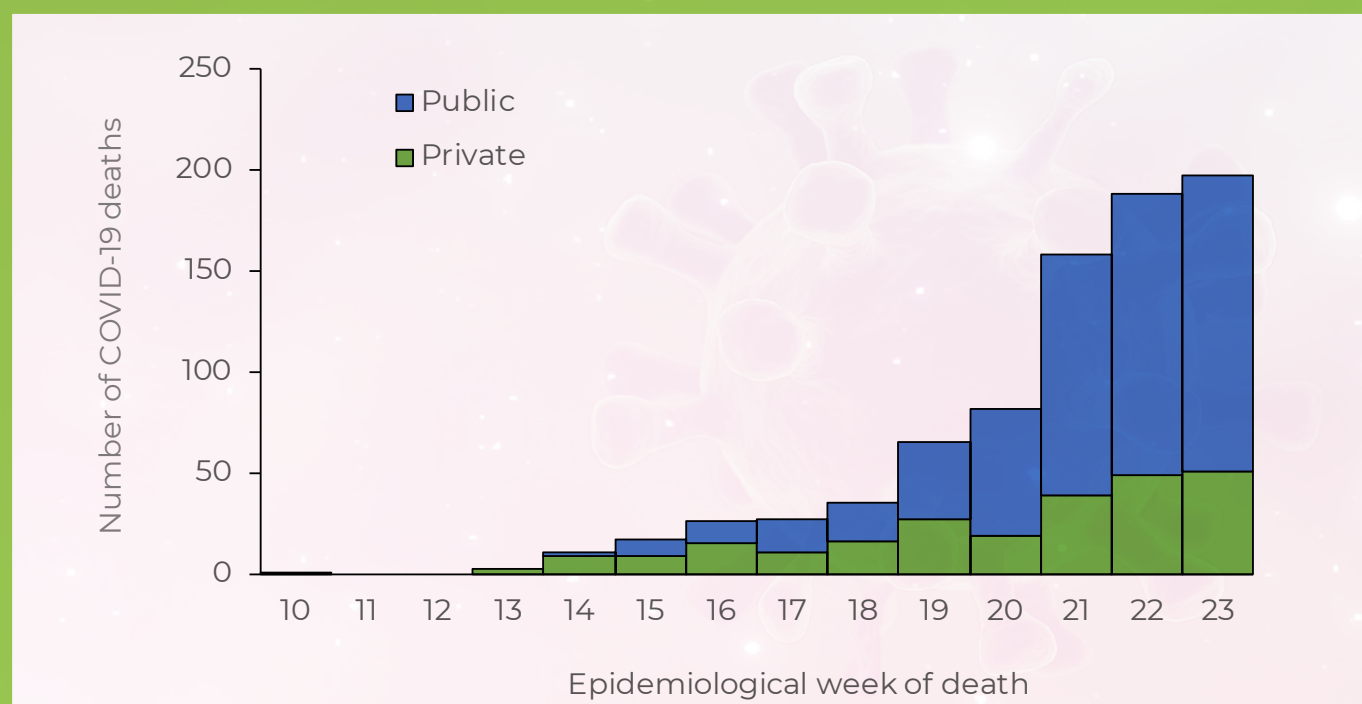


Figure 5: Number of COVID-19 deaths reported per week by health sector and epidemiologic week, South Africa, 5 March-7 June 2020, n=854

The median age of patients who died was 61 (IQR 52 – 71) years, and for those who were still alive was 47 (IQR 35 – 58) years. There were 61 (7.1%) deaths in patients younger than 40 years (Figure 6).

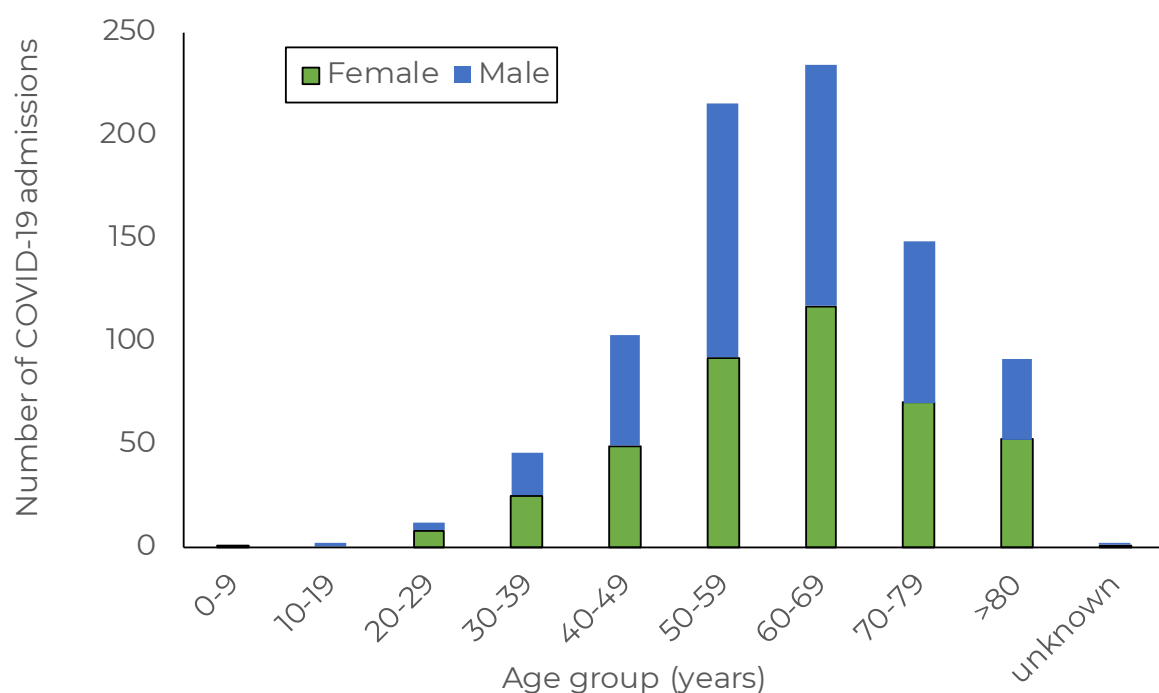


Figure 6: Number of reported COVID-19 deaths by age and gender, South Africa, 5 March-7 June 2020, n=854

On multivariable analysis, factors associated with in-hospital mortality were older age groups, 40-64 years (438/3105, case fatality ratio 14.1%; aOR 3.5; 95% CI 2.6-4.9) and ≥ 65 years (353/1234, 28.6%; aOR 7.2; 95% CI 5.1-10.1) as compared to < 40 years (61/1952, 3.1%); male sex (439/2927, 15.0%; aOR 1.5; 95% CI 1.3-1.8); admitted in the public sector (584/3363, 17.4%; aOR 1.7; 95% CI 1.4-2.1); and having comorbid hypertension (468/2049, 22.8%; aOR 1.5; 95% CI 1.2-1.8), diabetes (408/1667, 24.5%; aOR 1.6; 95% CI 1.3-1.9), chronic renal disease (104/239, 43.5%; aOR 2.6; 95% CI 1.9-3.5), malignancy (16/47, 34.0%; aOR 4.1; 95% CI 2.1-8.0) and HIV (99/618, 16.0%; aOR 1.4; 95% CI 1.04-1.8).

Patients who died were less likely to be admitted in Free State Province (8/133, 6.0%; aOR 0.4; 95% CI 0.2-0.9), Gauteng Province (31/719, 4.3%; aOR 0.4; 95% CI 0.2-0.6) or North West Province (4/156, 2.6%; aOR 0.3; 95% CI 0.1-0.9) as compared to the Eastern Cape Province (78/547, 14.3%) (Table 3).

Table 3: Univariate and multivariable analysis of factors associated with mortality among 6353 admissions, South Africa, 5 March-7 June 2020

Characteristic	Case-fatality ratio n/N (%)	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age group					
<40 years	61/1 952 (3.81)	Reference		Reference	
40-64 years	438/3105 (14.1)	5.1 (3.9-6.7)	<0.001	3.5 (2.6-4.9)	<0.001
≥65 years	353/1 234 (28.6)	12.4 (9.4-16.5)	<0.001	7.2 (5.1-10.1)	<0.001
Unknown	2/62 (3.2)	1.0 (0.2-4.3)	0.964	1.1 (0.2-4.6)	0.930
Sex					
Female	415/3 426 (12.1)	Reference		Reference	
Male	439/2 927 (15.0)	1.3 (1.1-1.5)	0.001	1.5 (1.3-1.8)	<0.001
Occupation					
Not Healthcare worker	848/6 138 (13.8)	Reference			
Healthcare worker	6/215 (2.8)	0.2 (0.1-0.4)	<0.001		
Peri-partum					
No	410/3 148 (13.0)	Reference			
Yes	5/278 (1.8)	0.1 (0.5-0.3)	<0.001		
Comorbid condition					
No co-morbidity	72/1 551 (4.6)	Reference			
1 co-morbid condition	233/1 648 (14.1)	3.4 (2.6-4.4)	<0.001		
≥2 comorbid conditions	436/1 790 (24.5)	6.6 (5.1-8.6)	<0.001		
Unknown	113/1 364 (8.3)	1.2 (1.4-2.5)	<0.001		
Hypertension					
No	273/2 947 (9.3)	Reference		Reference	
Yes	468/2 049 (22.8)	2.9 (2.5-3.4)	<0.001	1.5 (1.2-1.8)*	0.001
Diabetes mellitus					
No	333/3 329 (10.0)	Reference		Reference	
Yes	408/1 667 (24.5)	2.9 (2.5-3.4)	<0.001	1.6 (1.3-1.9)*	<0.001
Chronic cardiac disease					
No	718/4 890 (14.7)	Reference			
Yes	23/77 (29.9)	2.5 (1.5-4.1)	<0.001		
Chronic pulmonary disease/ Asthma					
No	642/4 443 (14.5)	Reference			
Yes	99/553 (17.9)	1.3 (1.02-1.6)	0.032		
Chronic renal disease					
No	637/4 757 (13.4)	Reference		Reference	
Yes	104/239 (43.5)	5.0 (3.8-6.5)	<0.001	2.6 (1.9-3.5)*	<0.001
Malignancy					
No	725/4 949 (14.7)	Reference		Reference	
Yes	16/47 (34.0)	3.0 (0.97-5.0)	0.059	4.1 (2.1-8.0)*	0.001
HIV					
No	642/4 378 (14.7)	Reference		Reference	
Yes	99/618 (16.0)	1.1 (0.9-1.4)	0.375	1.4 (1.04-1.8)*	

Tuberculosis					
No	716/8 862 (14.7)	Reference			
Yes	15/97 (15.5)	1.3 (0.9-2.1)	0.208		
Past Tuberculosis					
No	637/4 663 (14.4)	Reference			
Yes	68/333 (20.4)	1.5 (1.2-2.0)	0.03		
Health sector					
Private sector	270/2 990 (9.0)	Reference		Reference	
Public sector	584/3 363 (17.4)	2.1 (1.8-2.5)	<0.001	1.7 (1.4-2.1)	0.001
Province					
Eastern Cape	78/547 (14.3)	Reference		Reference	
Free State	8/133 (6.0)	0.4 (0.2-0.8)	0.013	0.4 (0.2-0.9)	0.033
Gauteng	31/719 (4.3)	0.3 (0.2-0.4)	<0.001	0.4 (0.2-0.6)	<0.001
KwaZulu-Natal	44/492 (8.9)	0.6 (0.4-0.9)	0.008	0.8 (0.5-1.2)	0.231
Limpopo	2/29 (6.9)	0.4 (0.1-1.9)	0.267	0.8 (0.2-3.7)	0.743
Mpumalanga	2/29 (7.1)	0.5 (0.1-3.6)	0.461	1	-
North West	4/156 (2.6)	0.2 (0.1-0.4)	<0.001	0.3 (0.01-0.9)	0.038
Northern Cape	0/17 (0)	1	-	1	-
Western Cape	686/4 426 (16.2)	1.2 (0.9-1.5)	0.254	0.9 (0.7-1.2)	0.564
Severe**					
No	538/4 975 (10.8)	Reference			
Yes	316/1 378 (22.9)	2.5 (2.1-2.9)	<0.001		
Ever ICU					
No	604/5 524 (10.9)	Reference			
Yes	204/657 (31.1)	3.5 (3.0-4.2)	<0.001		
Ever High Care					
No	773/5 700 (13.6)	Reference			
Yes	70/520 (13.5)	0.9 (0.7-1.2)	0.12		
Ever ventilated					
No	676/5 923 (11.4)	Reference			
Yes	178/430 (41.4)	5.5 (4.5-6.7)	<0.001		
Ever on oxygen					
No	629/5 159 (12.4)	Reference			
Yes	225/1 194 (18.8)	1.7 (1.4-2.2)	<0.001		

* Multivariable model excluded all individuals with unknown comorbid conditions

** Severe disease was defined as any individual who was treated in high care or intensive care unit (ICU), ventilated or diagnosed with acute respiratory distress syndrome (ARDS).

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ACKNOWLEDGEMENTS

Private hospital groups submitting data to DATCOV19:

Netcare
Life Healthcare
Mediclinic Southern Africa
National Hospital Network (NHN)
Clinix Health Group
Lenmed
Joint Medical Holdings (JMH)

Western Cape province: all public sector hospitals submitting data to DATCOV19

Public hospitals using DATCOV19 surveillance online platform:

Dora Nginza Hospital (EC)
Frere Hospital (EC)
Livingstone Hospital (EC)
Madwaleni Hospital (EC)
Uitenhage Hospital (EC)
Pelonomi Hospital (FS)
National District Hospital (FS)
Universitas Hospital (FS)
Tambo Memorial Hospital (GP)
Steve Biko Academic Hospital (GP)
Charlotte Maxeke Johannesburg Academic Hospital (GP)
Helen Joseph Hospital (GP)
Greys Hospital (KZN)
Ladysmith Hospital (KZN)
Manguzi Hospital (KZN)
Addington Hospital (KZN)
Polokwane Hospital (LP)
Robert Mangaliso Sobukwe Hospital (NC)
Tshepong Hospital (NW)
Job Shimankana Thabane Hospital (NW)
Tygerberg Hospital (WC)
Helderberg Hospital (WC)