

COVID-19

Hospital Surveillance-Weekly Update on Hospitalized HCWs

Update: Week 37, 2021



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This report summarises data of COVID-19 cases admitted to hospital surveillance sites in all provinces. The report is based on data collected from 5 March 2020 to 18 September 2021 on the DATCOV platform.

HIGHLIGHTS

- As of 18 September 2021 (week 37 of 2021), 10247 (2.7%) of the 377030 COVID-19 hospital admissions recorded on the DATCOV surveillance database, were health care workers (HCWs), reported from 664 facilities in all nine provinces of South Africa. Among 3085/10247 (30.1%) HCWs with available data on type of work, 1766/3085 (57.2%) were nurses, 665/3085 (21.6%) porters or administrators, 281/3085 (9.1%) allied HCWs, 236/3085 (7.7%) doctors, 71/3085 (2.3%) paramedics, and 35/3085 (1.1%) were laboratory scientists.
 - There were 3209 (31.2%) and 7038 (68.7%) admissions reported in the public and private sectors, respectively. The majority of HCW admissions (8532/10247; 83.3%) were recorded in four provinces, with the highest number 3430/10247 (33.5%) reported in Gauteng, followed by 2378/10247 (23.2%) in KwaZulu-Natal, 1252/10247 (12.2%) in Eastern Cape and 1472/10247 (14.4%) in Western Cape Provinces.
 - The median age of COVID-19 admissions among HCWs was 50 years (interquartile range [IQR] 40–58). There were 2162 (21.1%) admissions in HCWs 60 years and older (Figure 4). Among the admitted HCWs with COVID-19, 6832 (66.7%) were females.
 - The prevalence of comorbid diseases among HCW was 4355/8270 (52.6%). Among the 8270 HCWs who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (3010/8270; 36.4%) and diabetes (1938/8270; 23.4%). There were 5.0% (414/8270) of HCWs that were HIV positive, 5.1% (418/8270) were obese, 0.8% (65/8270) had active tuberculosis (TB) and 0.9% (75/8270) reported a previous history of TB.
 - A total of 1656 (16.1%) HCWs admitted were treated in ICU, of these 1019 (62.0%) required supplemental oxygen, 576 (35.0%) required invasive mechanical ventilation and 337 (33.1%) required both treatments. Of the 10247 HCWs admitted, 8715 (85.0%) were discharged alive, 240 (2.3%) transferred out to either high-level care or step-down facilities, 1211 (11.8%) had died and 81 (0.8%) were currently in hospital. The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (385, 31.8%) and KwaZulu-Natal 292 (24.1%), followed by the Eastern Cape (206, 17.0%) provinces. Of the HCWs who died, 749 (65.4%) had comorbid disease reported and 366 (32.0%) had more than one reported comorbidity.
 - There were a total of 4323 (1.1%), 4459 (1.2%) and 1465 (0.4%) HCW admissions among 377030 total admissions and 364 (0.5%), 620 (0.8%), and 227 (0.3%) deaths among 80008 total deaths in the first, second and third waves respectively. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 8.6% (364/214), 14.4% (620/4306) and 16.1% (227/1406) in the first, second and third waves.
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Methods

DATCOV hospital surveillance for COVID-19 admissions was initiated on 1 April 2020. Data are submitted by public and private hospitals that have agreed to report COVID-19 admissions through DATCOV surveillance in all nine provinces of South Africa (Table 1). A COVID-19 case was defined as a person with a positive reverse transcriptase-polymerase chain reaction (RT-PCR) assay or positive antigen test for SARS-CoV-2 who was admitted to a hospital. All hospitalized patients who were noted to be doctors, nurses, allied health care workers, laboratory staff, porters and administrative staff were captured as health care workers (HCWs). HCWs included in this surveillance report were from 20 to 79 years old, the age group of almost all HCWs in South Africa. The age group was also applied in the non-HCWs to make the two groups comparable. An individual was defined as having severe disease if treated in high care or intensive care unit (ICU) or ventilated or diagnosed with acute respiratory distress syndrome (ARDS).

Data on all COVID-19 admissions are received from all private and public hospitals nationally, in all nine provinces. As new hospitals join the surveillance system, they retrospectively captured all admissions recorded. As of 18 September 2021, a total of 664 facilities, 409 from the public sector and 255 from the private sector submitted data on hospitalized patients with COVID-19 (Table 1).

Table 1: Number of hospitals reporting data on COVID-19 admissions by province and health-sector, South Africa, 5 March 2020–18 September 2021

Provinces	Public	Private
Eastern Cape	86	18
Free State	35	20
Gauteng	40	94
KwaZulu-Natal	70	46
Limpopo	41	7
Mpumalanga	31	9
North West	18	13
Northern Cape	29	6
Western Cape	59	42
South Africa	409	255

Results

From 5 March 2020 to 18 September 2021, there was a total of 10247/ 377030 (2.7%) COVID-19 admissions among HCWs. Of these admissions, 3209 (31.2%) and 7038 (68.7%) were reported in the public and private sectors, respectively (Figure 1). The majority of HCW admissions (8532/10247; 83.3%) were recorded in four provinces, with the highest number 3430/10247 (33.5%) reported in Gauteng, followed by 2378/10247 (23.2%) in KwaZulu-Natal, 1252/10247 (12.2%) in Eastern Cape and 1472/10247 (14.4%) in Western Cape Provinces. (Figure 1).

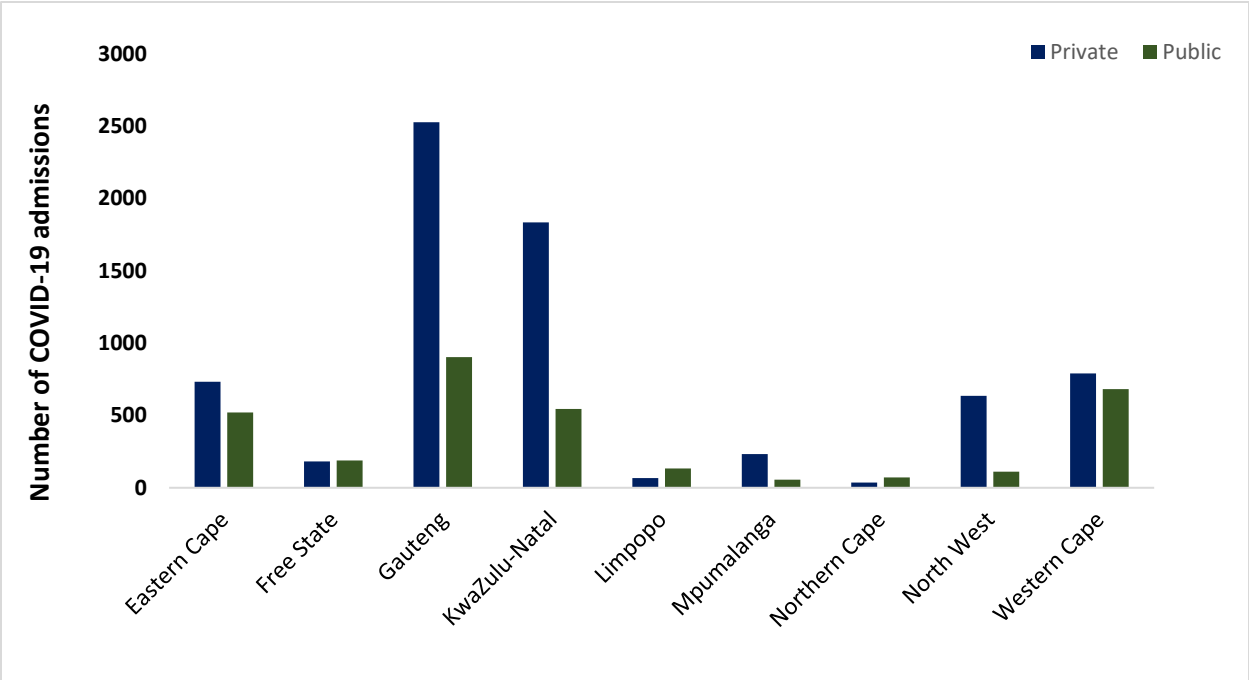


Figure 1: Number of reported COVID-19 admissions among HCWs by province and health sector, South Africa, 5 March 2020 –18 September 2021 (n=10247)

Figure 2 shows that HCW admissions peaked in week 28 of 2020 during the first wave of the pandemic, in week 1 of 2021 during the second wave, and in week 27 during the third wave.

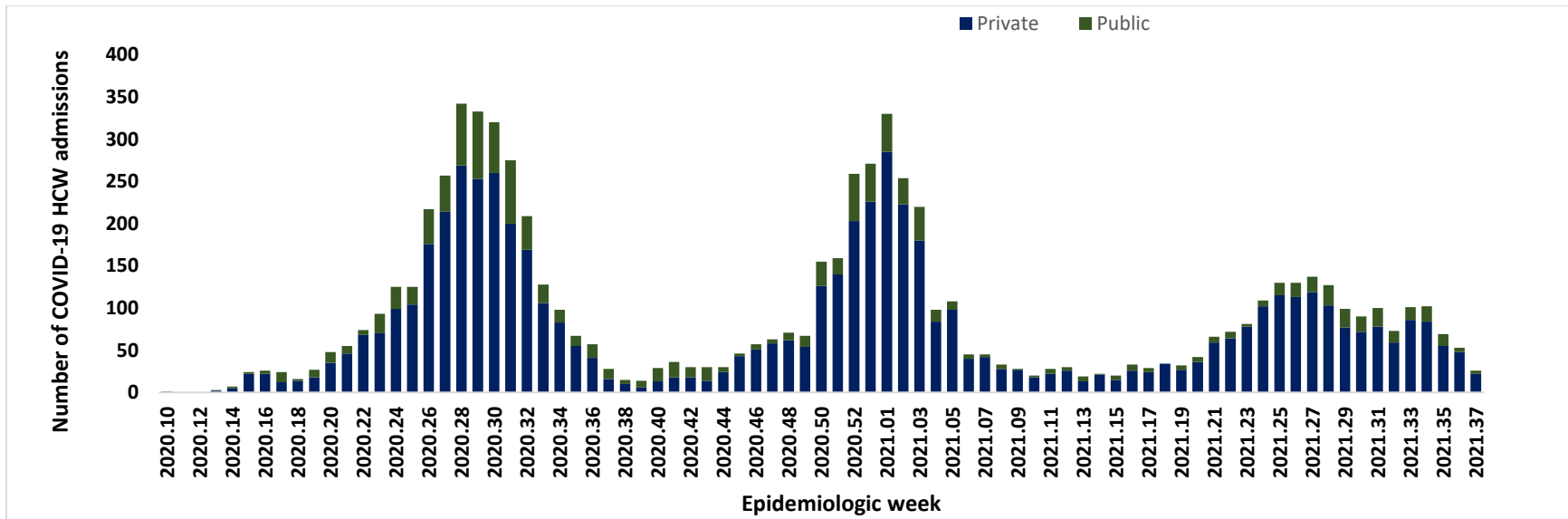


Figure 2: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and health-sector, South Africa, 5 March 2020 –18 September 2021 (n=10247)

The numbers of HCW admissions were highest in Gauteng, KwaZulu-Natal and Eastern Cape during the first wave and highest in Gauteng, KwaZulu-Natal and Western Cape during the second wave. At the start of the third wave, the number of COVID-19 HCW admissions increased in Gauteng and it seems to remain relatively constant from week 25 of 2021 (Figure 3). HCW admissions in Gauteng declined from week 27 of 2021. In week 33-35 of 2021, the epidemic curve shows a slight increase in HCW admissions in Kwa-Zulu Natal, followed by a decline in number of admissions in week 37 of 2021. Overall, there were lower HCW admissions in the third wave across all provinces compared to the second and the first wave.

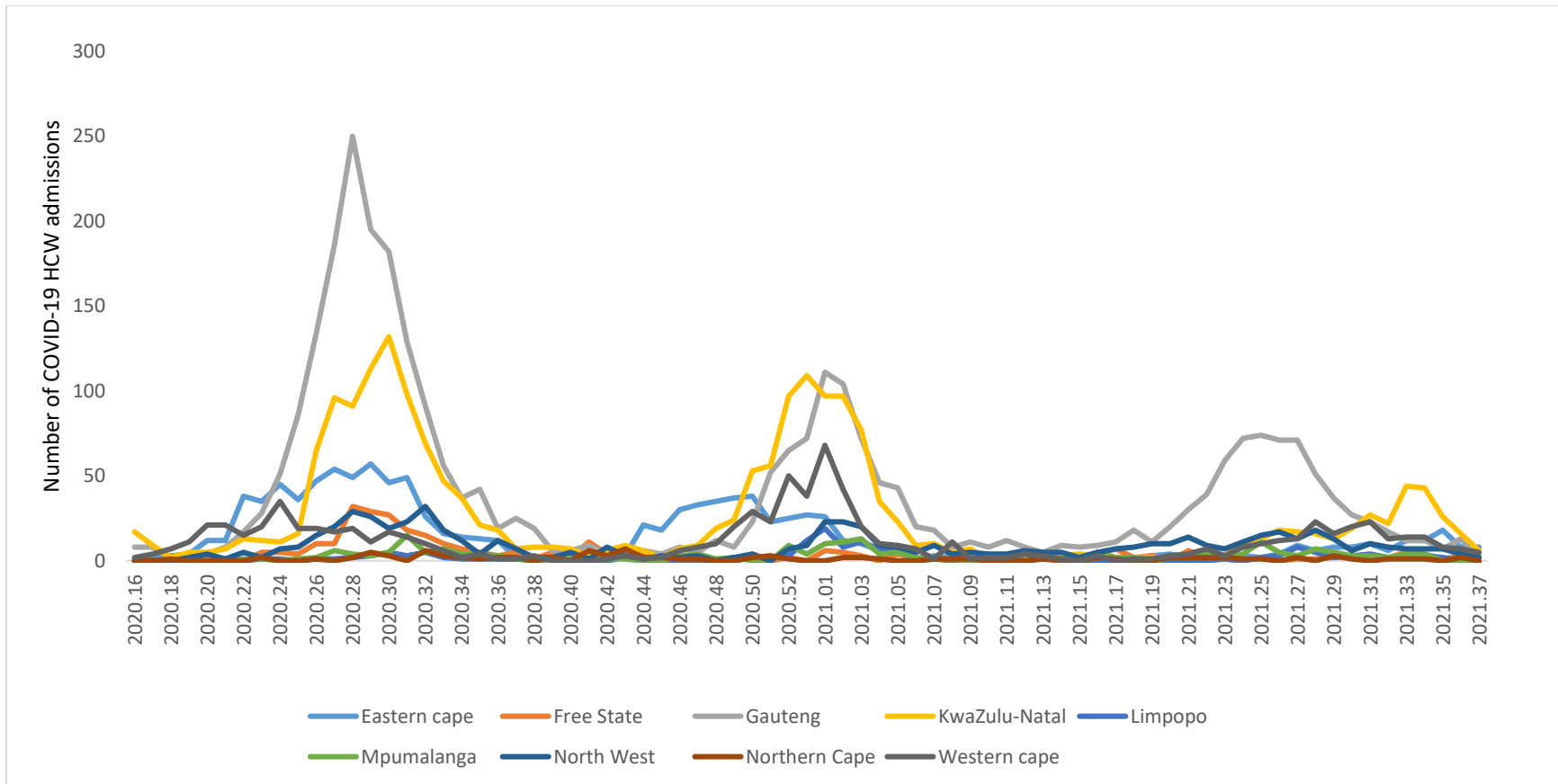


Figure 3: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and provinces, South Africa, 5 March 2020 – 18 September 2021 (n=10247)

Demographic and clinical characteristics of HCWs admitted with COVID-19, South Africa, 5 March 2020 –18 September 2021

The median age of COVID-19 admissions among HCWs was 50 years (interquartile range [IQR] 40–58). There were 2162 (21.1%) admissions in HCWs 60 years and older (Figure 4). Among the admitted HCWs with COVID-19, 6832 (66.7%) were females. The sex ratio varied by age group with females more common than males in all age groups (Figure 4). Among the 6289 female admissions, 230 (3.4%) were pregnant.

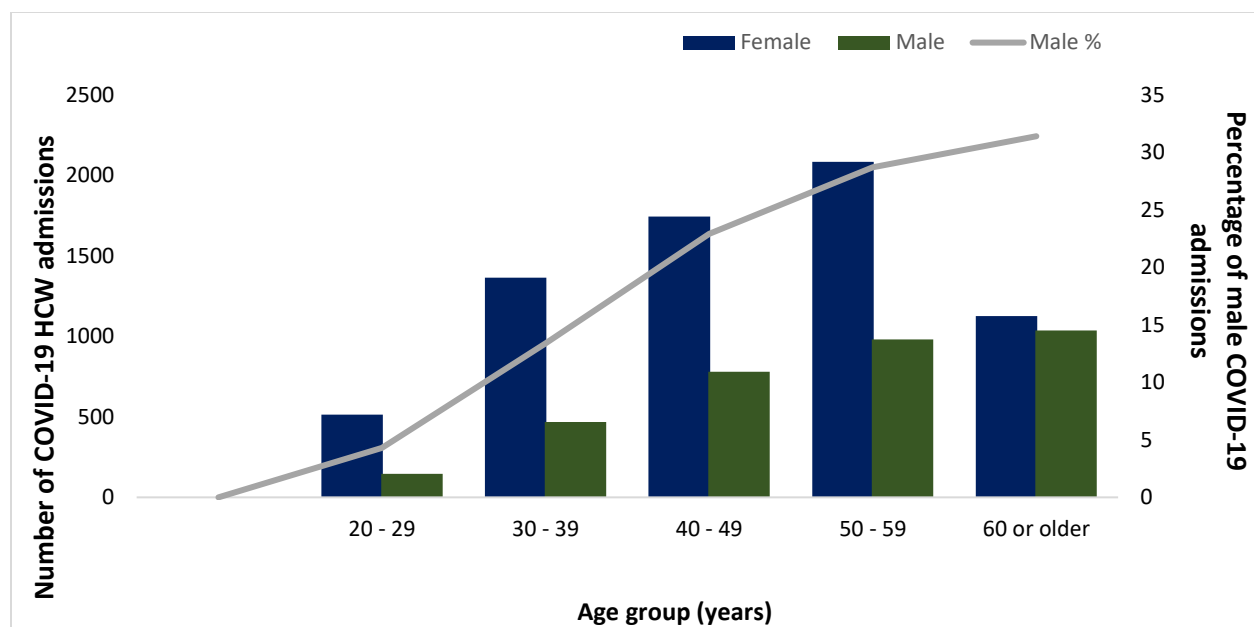


Figure 4: Number of reported HCW admitted with COVID-19 by age, gender and percentage of males, South Africa, 5 March 2020 –18 September 2021 (n=9417).

The prevalence of comorbid diseases among HCW was 4355/8270 (52.6%). Among the 8270 HCWs who had reported a comorbid condition, the most commonly reported comorbid conditions were

hypertension (3010/8270; 36.4%) and diabetes (1938/8270; 23.4%). There were 5.0% (414/8270) of HCWs that were HIV positive, 5.1% (418/8270) were obese, 0.8% (65/8270) had active tuberculosis (TB) and 0.9% (75/8270) reported a previous history of TB. (Table 2).

Table 2: The number and prevalence of comorbid diseases in HCW admitted with COVID-19, South Africa, 5 March 2020 – 18 September 2021 (n=8270)

Comorbid disease*	Frequency (n)	Percentage (%)
Hypertension	3010	36.4
Diabetes mellitus	1938	23.4
Chronic cardiac disease	158	1.9
Chronic pulmonary disease/Asthma	545	6.6
Chronic renal disease	54	0.7
Malignancy	35	0.4
HIV	414	5.0
Active tuberculosis	65	0.8
Previous history of tuberculosis	73	0.9
Obesity	418	5.1

* 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

A total of 1656 (16.1%) HCWs admitted were treated in ICU, of these 1019 (62.0%) required supplemental oxygen, 576 (34.8%) required invasive mechanical ventilation and 337 (33.1%) required both treatments. The mean age of patients who received oxygen or ventilation as an intervention (52.5 years) was significantly older than those who did not receive oxygen or ventilation intervention (46.4 years) ($p < 0.0001$). Of the all HCW admissions treated with oxygen or ventilation, 878/3937 (22.3%) had more than one comorbid disease ($p < 0.001$).

Outcomes

Of the 10247 HCWs admitted, 8715 (85.0%) were discharged alive, 240 (2.3%) transferred out to either high-level care or step-down facilities, 1211 (11.8%) had died and 81 (0.8%) were currently in hospital. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 12.2% (1211/9926) compared to a CFR of 24.4% (77793/319182) among non-HCW admissions ($p < 0.001$) (Figure 5).

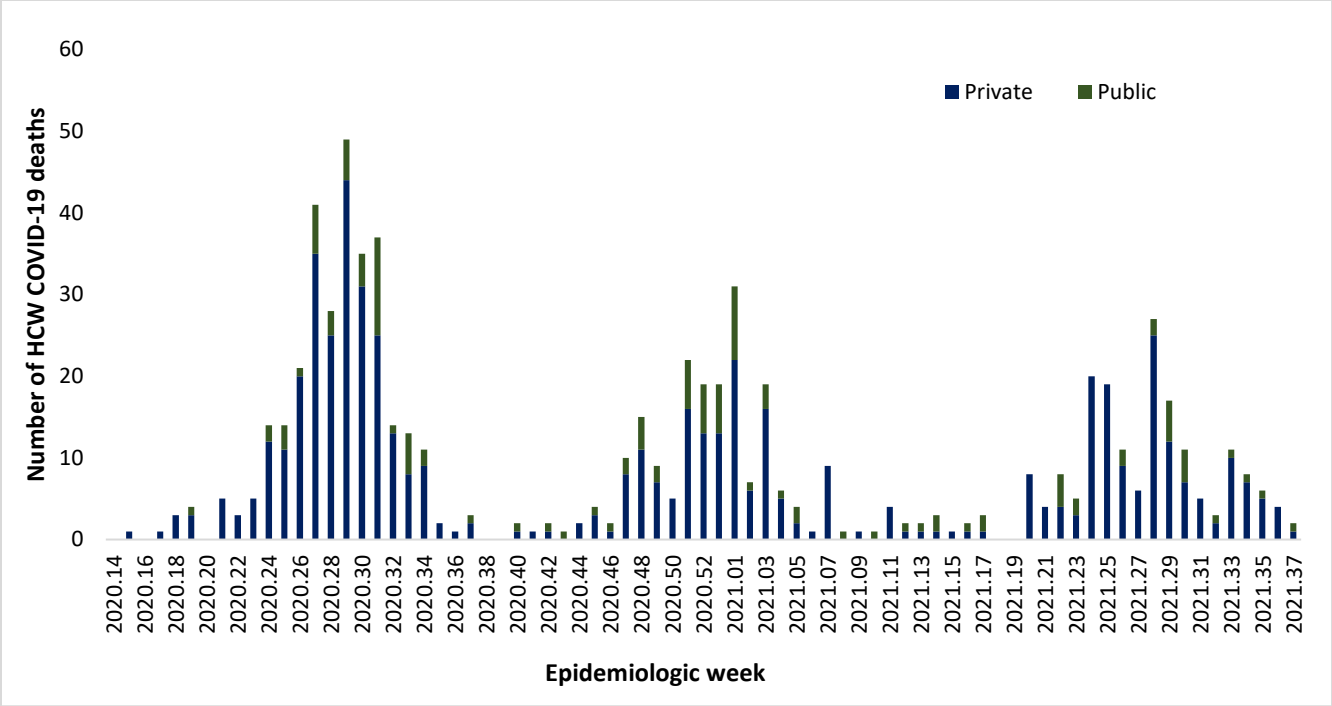


Figure 5. The number of reported COVID-19 deaths among admitted HCW by epidemiologic week in the private and public sector, South Africa, 5 March–18 September 2021.

Please note that the mortality data presented was based on available information from sentinel hospitals as of 13 March 2021, thus not all deaths that occurred during the reporting period nationally are included. Deaths that were subsequently confirmed not to be of an HCW were removed from the data set.

The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (385, 31.8%) and KwaZulu-Natal 292 (24.1%), followed by the Eastern Cape (206, 17.0%) provinces. Five hundred and forty-two (44.8%) of the deaths were recorded among HCWs aged 60 years and older. The median age of those who died was 58 (IQR 50 – 66) years compared to 49 (IQR 39 – 57) years for those who were still alive. Seven hundred and twenty-two (59.9%) of the deceased were admitted at ICU, 368 (30.5%) were ventilated, and 729 (60.5%) were given supplemental oxygen. The median length of stay for the HCWs who died was 11 days [IQR 5 – 19] compared to 6 days [3 – 10] for those discharged alive. Of the HCWs who died, 749 (65.4%) had comorbid disease reported and 366 (32.0%) had more than one reported comorbidity. Hypertension 577 (48.9 %), diabetes 421 (37.8%) and obesity 70 (24.4%) were the common reported comorbid diseases among the deceased.

Comparison of COVID-19 admissions and deaths among HCWs in the first, second and third wave

There were a total of 4323 (1.1%), 4459 (1.2%) and 1465 (0.4%) HCW admissions among 377030 total admissions and 364 (0.5%), 620 (0.8%), and 227 (0.3%) deaths among 80008 total deaths in the first, second and third waves respectively. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 8.6% (364/214), 14.4% (620/4306) and 16.1% (227/1406) in the first, second and third waves respectively. The reduction in HCW admissions in the third wave was likely the result of a large percent of HCW having received vaccination, as well as an effect of immunity following previous natural infection in the first two waves.

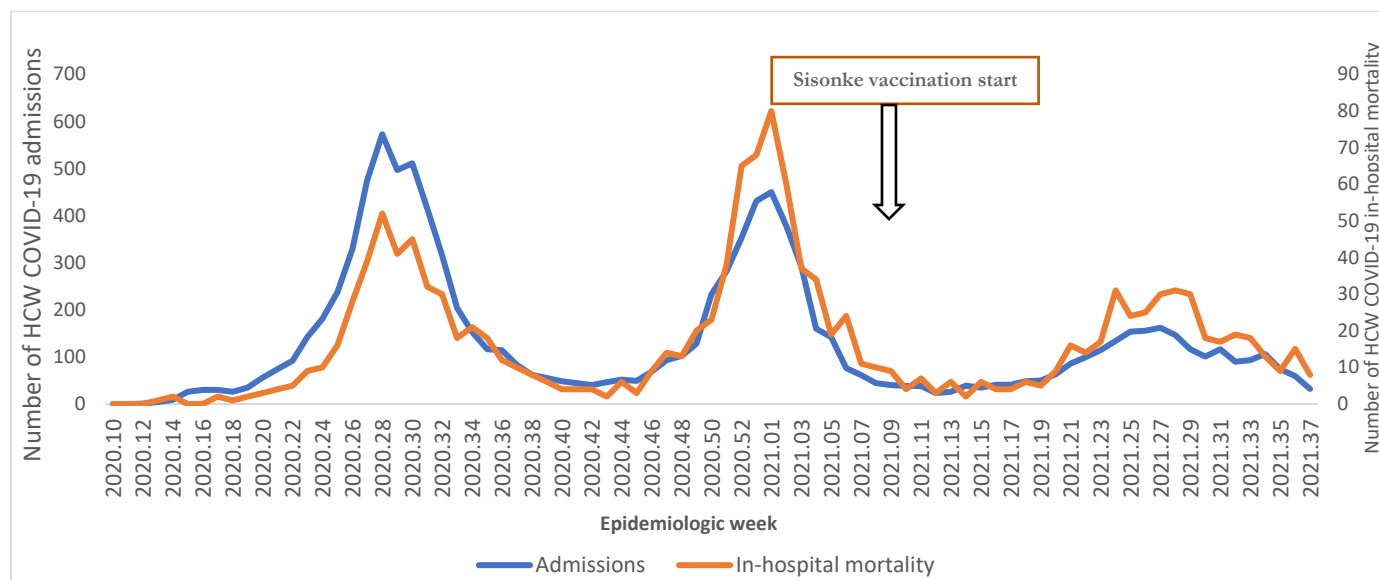


Figure 6: Number of COVID-19 HCW admissions and in-hospital mortality during first and second wave across South Africa, 5 March–18 September 2021 (n=10247).

Conclusions

Since the start of vaccination in South Africa on 17 February 2021, more than 496060 HCWs have been vaccinated. The number of HCW admissions has been lower in the third wave compared to the first two waves. While the numbers of admissions are lower in the third wave, the number of deaths and the CFR of HCWs was higher in the second and third wave than in the first wave. This is in keeping with the publication of DATCOV data, that revealed a 31% higher mortality rate in the second wave compared to the first wave, even after adjusting for age, sex, race, province, sector and weekly hospital admissions; suggesting that the residual mortality may be associated with the new SARS-CoV-2 Beta lineage (501Y.V2) (Jassat *et al.*, 2021a, b). A high CFR in the third wave compared to the second and the first wave could be due to the highly transmissible SARS-CoV-2 Delta variant.

Acknowledgements

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Reference

1. Jassat W, et al. Increased mortality among individuals hospitalised with COVID-19 during the second wave in South Africa. 2021a. DOI: 10.1101/2021.03.09.21253184.
2. Jassat W, *et al.* Difference in mortality among individuals admitted to hospital with COVID-19 during the first and second waves in South Africa: a cohort study. *The Lancet: Global Health*, 2021b, 9 (9); E1216-E1225. DOI: 10.1016/S2214-109X (21)00289-8.