

COVID-19

Hospital Surveillance-Weekly Update on Hospitalized HCWs

Update: Week 32, 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 14 August 2021 on the DATCOV platform.

HIGHLIGHTS

- As of 14 August 2021 (week 32 of 2021), 9032 (2.6%) of the 354120 COVID-19 hospital admissions recorded on the DATCOV surveillance database, were health care workers (HCWs), reported from 668 facilities in all nine provinces of South Africa. Among 2705/9032 (29.9%) HCWs with available data on type of work, 1541/2705 (57.0%) were nurses, 618/2705 (22.9%) porters or administrators, 246/2705 (9.1%) allied HCWs, 206/2705 (7.6%) doctors, 62/2705(2.3%) paramedics, and 32/2705 (1.2%) were laboratory scientists.
- There were 2776 (30.7%) and 6256 (69.3%) admissions reported in the public and private sectors, respectively. The majority of HCW admissions (7121/8505; 83.7%) were recorded in four provinces, with the highest number 3152/9032 (34.9%) reported in Gauteng, followed by 2080/9032 (23.0%) in KwaZulu-Natal, 1114/9032 (12.3%) in Eastern Cape and 1199/9032 (13.3%) in Western Cape Provinces. The median age of COVID-19 admissions among HCWs was 50 years (interquartile range [IQR] 40–58). There were 1878 (20.8%) admissions in HCWs 60 years and older (Figure 4). Among the admitted HCWs with COVID-19, 6047 (66.9%) were females and 2983 (33.0%) were males.
- The prevalence of comorbid diseases among HCWs was 3918/7461 (52.5%). Among the 7461 HCWs who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (2692/7461; 36.1%) and diabetes (1751/7461; 23.4%). There were 5.0% (371/7461) of HCWs that were HIV positive, 5.0% (379/7461) were obese, 0.8% (57/7461) had active tuberculosis (TB) and 0.9% (70/7461) reported a previous history of TB.
- A total of 1585 (17.5%) HCWs admitted were treated in ICU, of these 998 (62.9%) required supplemental oxygen, 568 (35.8%) required invasive mechanical ventilation and 346 (34.7%) required both treatments. Of the 9032 HCWs admitted, 7649 (84.7%) were discharged alive, 100 (1.1%) transferred out to either high-level care or step-down facilities, 1136 (12.6%) had died and 147 (1.6%) were currently in hospital. The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (362, 31.9%) and KwaZulu-Natal 274 (24.1%), followed by the Eastern Cape (195, 17.2%) provinces. Of the HCWs who died, 693 (64.8%) had comorbid disease reported and 346 (30.5%) had more than one reported comorbidity. There were a total of 3983/9032 (44.1%), 4043/9032 (44.8%) and 1006/9032 (11.1%) admissions in the first, second and the third wave, respectively. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 12.9% (1136/8785).

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 14 August 2021, a total of 668 facilities, 411 from the public sector and 257 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 2020–14 August 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	31	8
Western Cape	59	42
South Africa	411	257

Results

From 5 March 2020 to 14 August 2021, there was a total of 9032/354120 (2.6%) COVID-19 admissions among HCWs. Of these admissions, 2776 (30.7%) and 6256 (69.3%) were reported in the public and private sectors, respectively (Figure 1). The majority of HCW admissions (7545/9032; 83.5%) were recorded in four provinces, with the highest number 3152/9032 (34.9%) reported in Gauteng, followed by 2080/9032 (23.0%) in KwaZulu-Natal, 1114/9032 (12.3 %) in Eastern Cape and 1199/9032 (13.4 %) in Western Cape provinces (Figure 1).

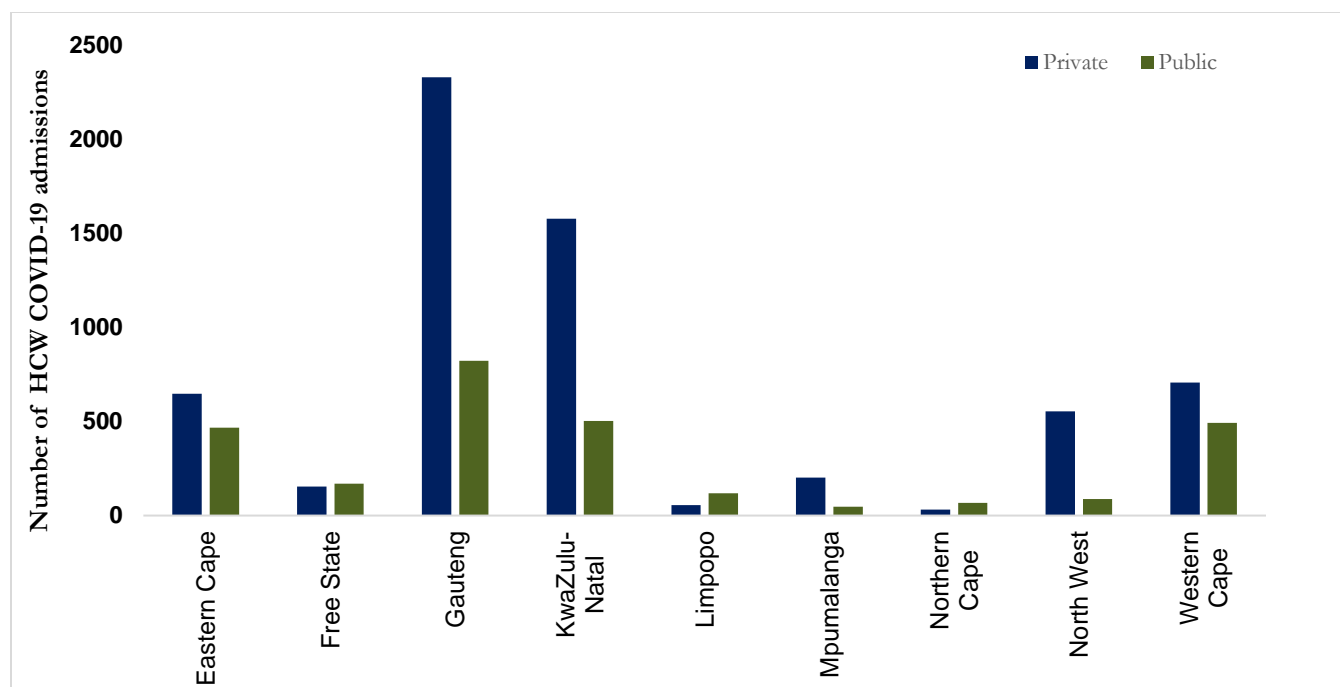


Figure 1: Number of reported COVID-19 admissions among HCWs by province and health sector, South Africa, 5 March 2020 –14 August 2021 (n=9032)

Figure 2 shows that HCW admissions peaked in week 28 of 2020 during the first wave of the pandemic and in week 1 of 2021 during the second wave. The number of HCW admissions increased from week 20 of 2021 during the third wave of the pandemic in South Africa, which peaked in week 27 of 2021.

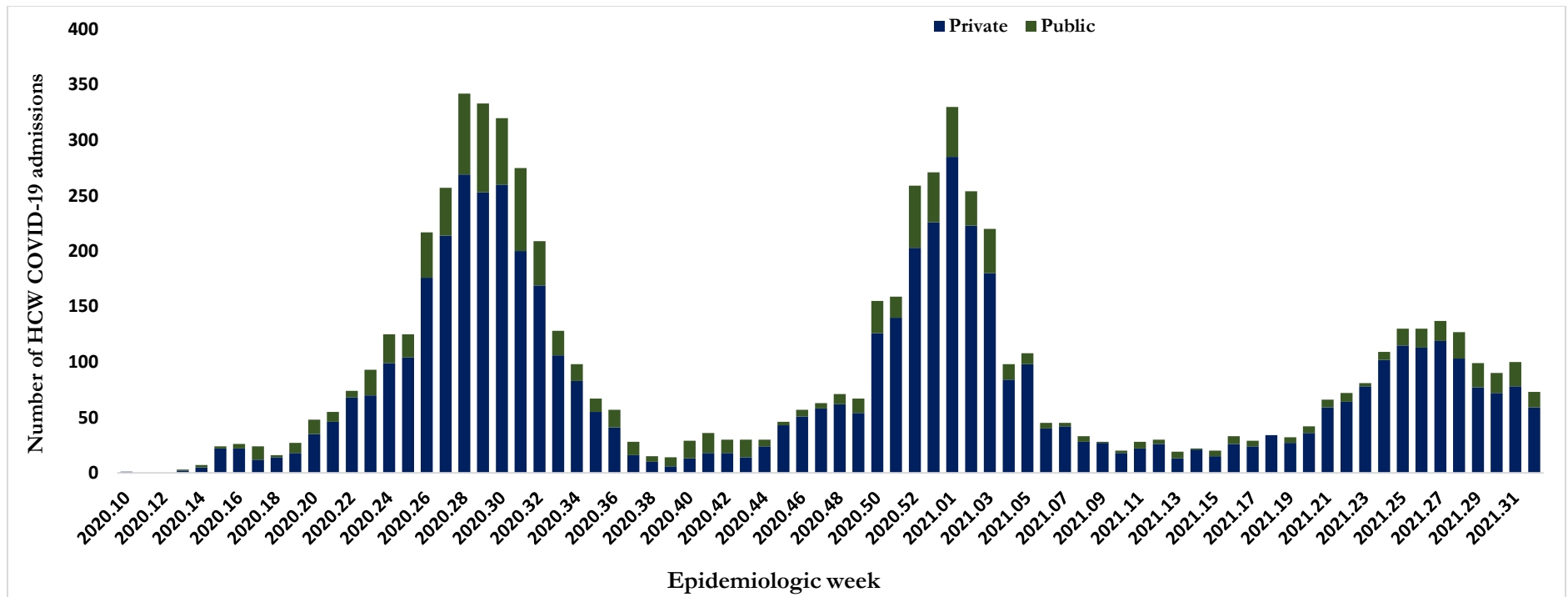


Figure 2: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and health-sector, South Africa, 5 March 2020 –14 August 2021 (n=9032)

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. The peak in the number of HCW admissions was lower in the second wave compared to the first wave for all provinces except Western Cape (Figure 3); and was lower in the third wave compared to the first two waves in all provinces. In the third wave, the number of COVID-19 HCW admissions was highest in Gauteng.

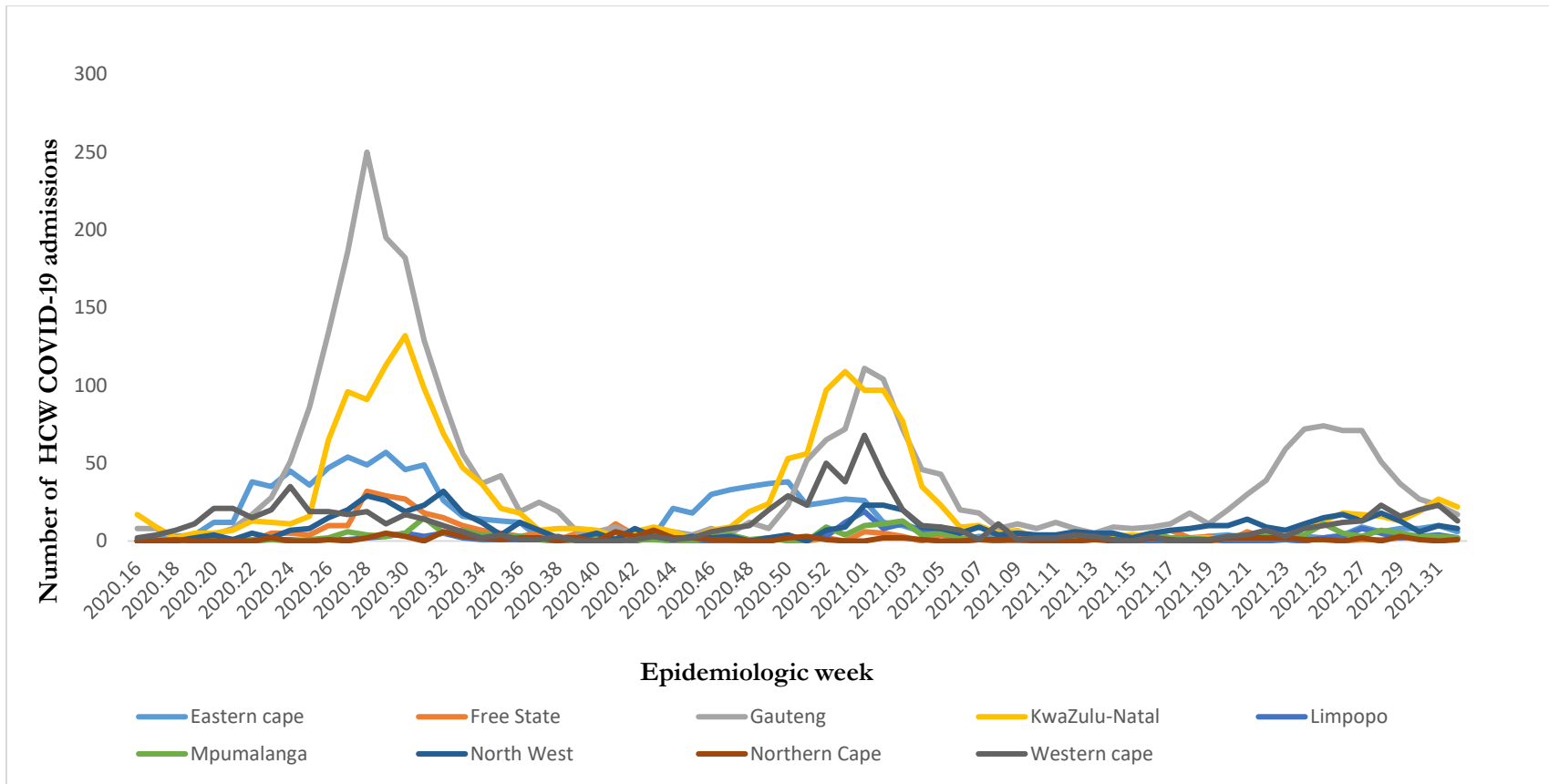


Figure 3: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and provinces, South Africa, 5 March 2020 – 14 August 2021 (n=9032)

Demographic and clinical characteristics of HCWs admitted with COVID-19, South Africa, 5 March 2020 –14 August 2021

The median age of COVID-19 admissions among HCWs was 50 years (interquartile range [IQR] 40–58). There were 1878 (20.8%) admissions in HCW 60 years and older (Figure 4). Among the admitted HCWs with COVID-19, 6047 (66.9%) were females and 2983 (33.0%) were males. The sex ratio varied by age group with females more common than males in all age groups (Figure 4). Among the 6047 female admissions, 192 (3.2%) were pregnant.

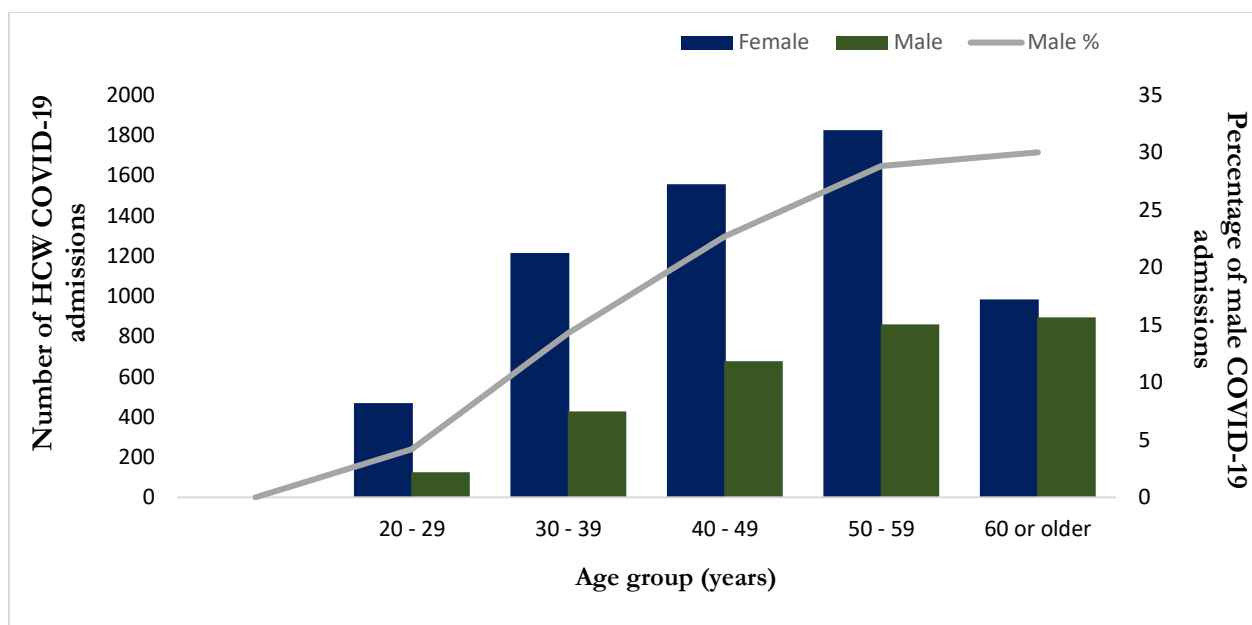


Figure 4: Number of reported HCW admitted with COVID-19 by age, gender and percentage of males, South Africa, 5 March 2020 –14 August 2021 (n=9032).

The prevalence of comorbid diseases among HCW was 3918/7461 (52.5%). Among the 7461 HCWs who had reported a comorbid condition, the most commonly reported comorbid conditions were

hypertension (2692/7461; 36.1%) and diabetes (1751/7461; 23.5%). There were 5.0% (371/7461) of HCWs that were HIV positive, 5.1% (379/7461) were obese, 0.8% (57/7461) had active tuberculosis (TB) and 0.9% (70/7461) 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 – 14 August 2021 (n=7461)

Comorbid disease*	Frequency (n)	Percentage (%)
Hypertension	2692	36.1
Diabetes mellitus	1751	23.5
Chronic cardiac disease	146	2.0
Chronic pulmonary disease/Asthma	510	6.
Chronic renal disease	46	0.6
Malignancy	36	0.5
HIV	371	5.0
Active tuberculosis	57	0.8
Previous history of tuberculosis	70	0.9
Obesity	369	5.0

* 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 1585 (17.5%) HCWs admitted were treated in ICU, of these 998 (62.9%) required supplemental oxygen, 568 (35.8%) required invasive mechanical ventilation and 346 (34.7%) required both treatments. The mean age of patients who received oxygen or ventilation as an intervention (52.6 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, 862/3778 (22.8%) had more than one comorbid disease ($p < 0.001$).

Outcomes

Of the 9032 HCWs admitted, 7649 (84.7 %) were discharged alive, 100 (1.1 %) transferred out to either high-level care or step-down facilities, 1136 (12.6%) had died and 147 (1.6%) were currently in hospital. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 12.9% (1136/8785) compared to a CFR of 24.4% (70352/287882) among non-HCW admissions ($p < 0.001$) (Figure 5).

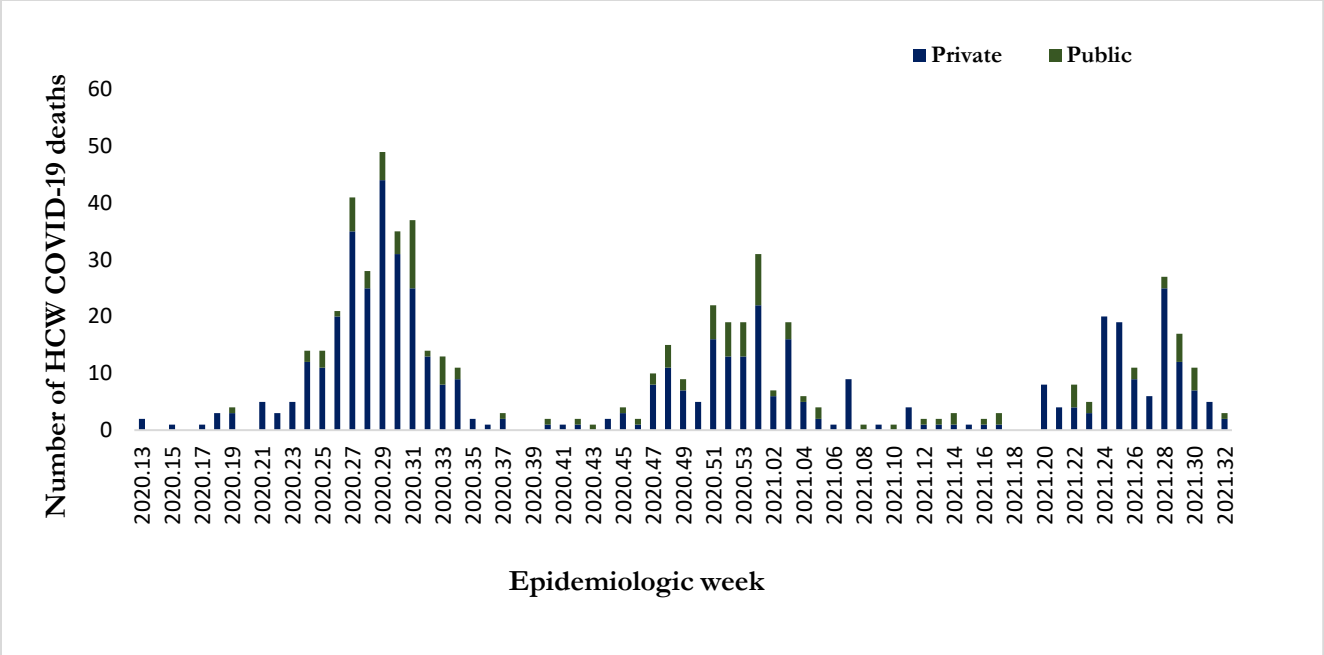


Figure 5. The number of reported COVID-19 deaths among admitted HCW by epidemiologic week in the private and public sector, South Africa, 5 March–14 August 2021.

The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (362, 31.2%) and KwaZulu-Natal 274 (24.1%), followed by the Eastern Cape (195, 17.2%) provinces. Five hundred and thirteen (45.2%) 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 48 (IQR 38 – 57) years for those who were still alive. Six hundred and seventy (58.9%) of the deceased were admitted at ICU, 348 (30.6%) were ventilated, and 698 (61.4%) were given supplemental oxygen. The median length of stay for the HCWs who died was 10 days [IQR 5 – 18] compared to 6 days [3 – 10] for those discharged alive. Of the HCWs who died, 693 (64.8%) had comorbid disease reported and 346 (30.5%) had more than one reported comorbidity. Hypertension 536 (60.0%), diabetes 392 (37.7%) and obesity 66 (23.6%) 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 3983/9032 (44.1%), 4043/9032 (44.8%) and 1006/9032 (11.1%) admissions and 357/3983 (8.9%), 617/4043 (15.2%), and 162/1006 (16.1%) deaths among HCW in the first second and third waves respectively. The in-hospital CFR among HCW was (357/3934, 9.1%), (617/3965, 15.6%) and (162/891, 18.2%) in the first, second and third waves respectively. The reduction 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.

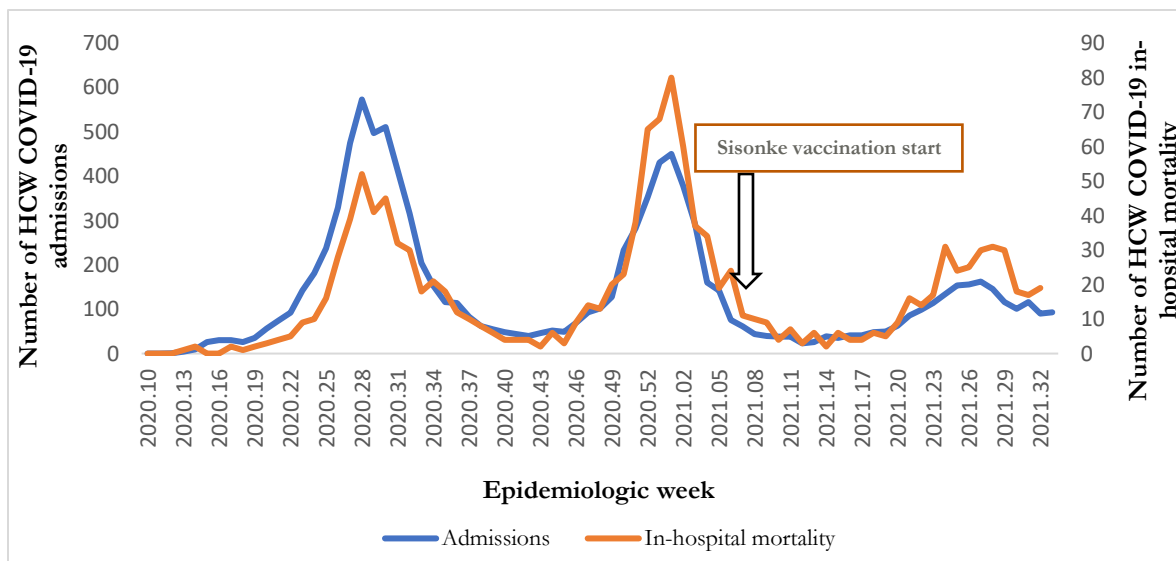


Figure 6: Number of COVID-19 HCW admissions and in-hospital mortality during first and second wave across South Africa, 5 March–14 August 2021.

Conclusions

Since the start of vaccination in South Africa on 17 February 2021, 496060 HCWs were vaccinated as of 26th August 2021. The number of HCW admissions has been lower in the third wave compared to the first two waves. While the numbers of admissions were lower in the second wave, the number of deaths and the CFR of HCWs was higher in the second 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.

Limitations

The mortality data presented was based on available information from hospitals, 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

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.