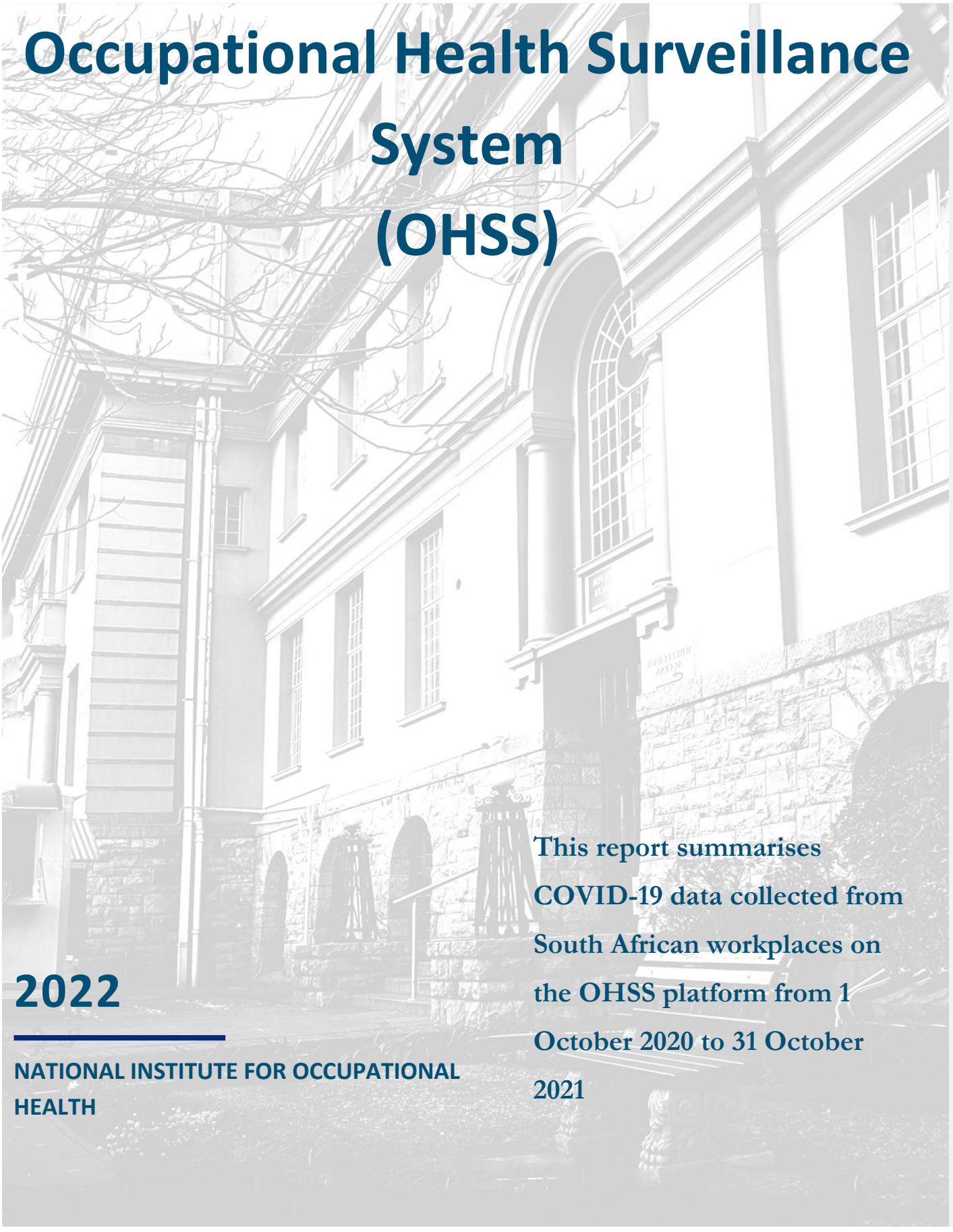
Occupational Health Surveillance System (OHSS)



This report summarises COVID-19 data collected from South African workplaces on the OHSS platform from 1 October 2020 to 31 October 2021

2022

NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH

ABBREVIATIONS

OHSS	-	Occupational Health Surveillance System
SARS-CoV-2	-	Severe Acute Respiratory Syndrome Coronavirus 2
NIOH	-	National Institute for Occupational Health
NICD	-	National Institute for Communicable Diseases
CSIR	-	Centre for Industrial Research
B4SA	-	Business for South Africa
UCT	-	University of Cape Town
UKZN	-	University of Kwa-Zulu Natal
RT-PCR	-	Positive reverse transcriptase- polymerase chain reaction
TB	-	Tuberculosis
COPD	-	Chronic obstructive pulmonary disease

LIST OF FIGURES

Contents

KEY FINDINGS

- Over a one-year period, 5 363 companies registered on the Occupational Health Surveillance System (OHSS), an increase of 2 252 companies since the last report in March 2021. This represented data of over 2 million employees. The majority of the businesses registered on the OHS platform were in Gauteng (n=2198 (42.8%)), followed by Western Cape (n=1156 (22.5%)) and Kwa-Zulu Natal (n=760 (14.8%)).
- Employees in elementary occupations and those in sales and service occupations (19%) comprised the largest proportion of jobs registered followed by clerical and support workers (16%). Service workers (989/3724 (27%)), professionals (979/3724 (26%)) and clerical and support workers (895/3724 (24%)) were the common occupational groups reporting COVID-19 positive cases.
- There were 4403 (0.2%) COVID-19 positive cases of the 2 025 675 employees that were reported on the OHSS platform in this period.
- Reflecting the provincial distribution in registration, majority of COVID-19 positive cases (2579 (59%)) were reported in three provinces, with the highest number reported from Gauteng (1494/3657 (41%)); followed by the Western Cape (639/3657; 17%) and Kwa-Zulu Natal (446/3657 (12%)). The median age of reported COVID-19 positive cases on OHSS was 34 years (IQR 28-40 years).
- Of those reporting vulnerability, 59.8% (12169/20343) were females and 39.3% (7989/20343) were males.
- The most commonly reported comorbidities were chronic lung diseases (32%), hypertension (3%) and asthma (2%).
- Among those employees with an outcome status, 13% (47/364) had died and 87% (317/364) were discharged. The case fatality rate (CFR) among employees was 1.2% (47/4403 X 100).

BACKGROUND

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), results in an infection commonly known as COVID-19. This, is a disease that is known to initially affect the respiratory system but can result in complications affecting other organ systems (1). COVID-19 surveillance programs have been implemented globally including South Africa. Workplaces have also shown to be drivers of COVID-19 transmission and sources of case clusters or outbreaks (2, 3), therefore early detection through workplace surveillance is critical.

The Occupational Health Surveillance System (OHSS) was developed to collect occupational health data related to COVID-19 during the State of Disaster. It uses COVID-19 surveillance digital platforms and/or taps into existing platforms (e.g. those already used by private sector employers) to collect screening, vulnerability, testing, high risk workplace contacts, health outcomes and return to work data for the surveillance system for workers in both the private and public sector.

The specific objectives of the OHSS are to:

- Provide strategic insights through data analytics and visualization into all phases (i.e., screening, testing, contact tracing within the workplace, vulnerable employees, return to work including health outcomes) of the COVID-19 infection spectrum in the South African workforce.
- Early identification of industries/companies and occupational groups at high risk of infection so as to inform appropriate interventions (e.g., policy, programmatic, resources).
- Understand the impact of the COVID-19 interventions in the workplaces.
- Develop a framework for a COVID-19 surveillance model for monitoring workers in general that includes both public and private sectors.
- Determine the human resource and economic impact of COVID-19 on the various industrial sectors.
- Identification of key scientific questions requiring further in-depth investigation.

The OHSS was developed by the National Department of Health, the National Institute of Occupational Health (NIOH), the National Institute for Communicable Diseases (NICD), Centre for Industrial Research (CSIR), Business for South Africa (B4SA) and occupational medicine specialists from University of Cape Town (UCT) and University of KwaZulu-Natal (UKZN), together with several major private sector corporations. The OHSS was piloted in August to September 2020 and officially commenced on the 1st October 2020 following the release of the Department of Employment and Labour Consolidated COVID-19 Directive on Health and Safety in the Workplace on 28 September 2020.

The latter Directive provided a legal framework for submission of data to the OHSS. This legal framework was arrived through a thorough engagement at the Occupational Health and Safety Task

Team sub-structure of the National Economic Development and Labour Advisory Council (NEDLAC) among the representatives of government, trade unions, employers and civil society.

METHODS

DATA COLLECTION

The reporting period is from 1 October 2020 to 31 October 2021. This coincided with the second and the third COVID-19 wave in South Africa. Data from workplaces that employ more than 50 employees is reported by employers to one of three online platforms (API, CSV via NEXTCLOUD, CMORE app). Submission of COVID-19 positive cases in workplaces was mandatory for irrespective of the size of the business. 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 reported to the OHSS by an employee.

The following employee data was reported:[i]

1. Vulnerability information for all employees (a once off submission, unless the status of an employee changes)
2. Nature of symptoms of symptomatic employees (submitted on a weekly basis)
3. COVID-19 positive data (submitted weekly where appropriate)
4. Number of high-risk contacts (submitted weekly where appropriate)
5. Health outcomes and return to work of COVID-19 status of COVID-19 positive employees (submitted weekly where appropriate)

DATA STORAGE

Data stored in the data lake is anonymised and any identifying information removed after a period of 6 weeks. All OHSS data collected by NIOH is securely stored and processed in the NIOH data centre. All systems used for data collection, storage, and processes are assessed on regular basis (every month) for any security vulnerabilities.

RESULTS

1.1. Business registrations

During this 13-month reporting period (1 October 2020 to 31 October 2021) a total of 5363 businesses had registered. This constituted data of 2,025,675 employees, representing 12% of all formal sector employees.[2] Most workplaces registered were located in Gauteng (46%), Western Cape (22%) and Kwa-Zulu Natal (14%), which represent provinces where major industries are generally concentrated (**Figure 1**).

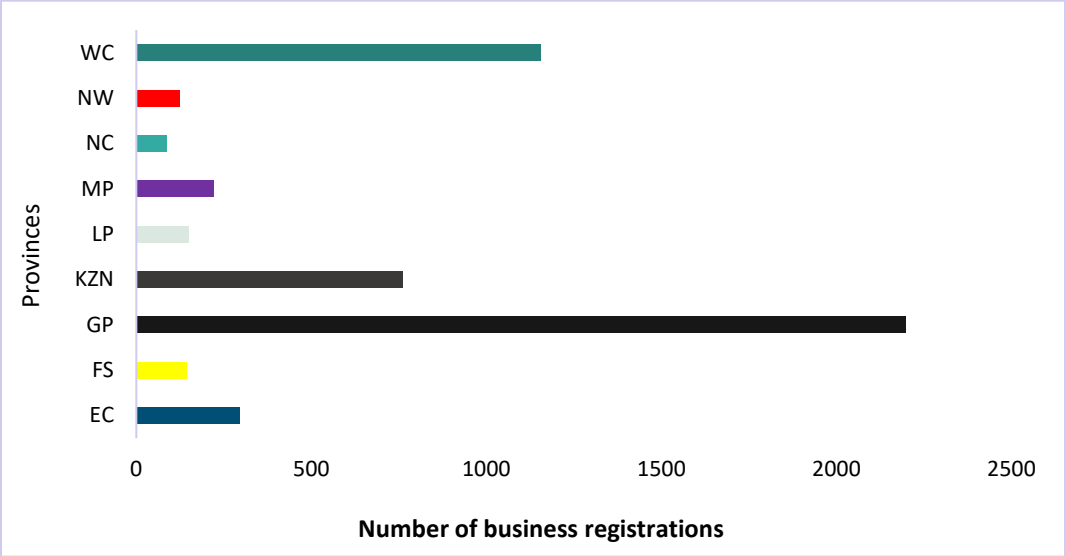


Figure 1: Number of business registrations on the OHSS platform (NC: Northern Cape; NW: North West; FS: Free State; LP: Limpopo Province; MP: Mpumalanga: EC: Eastern Cape; KZN: Kwa-Zulu Natal; WC: Western Cape; GP: Gauteng) (1 October 2020- 31 October 2021) (N=5363)

A trend graph showing number of business registered on the OHSS platform from October 2020 to 31 October 2021 is shown in Figure 2.

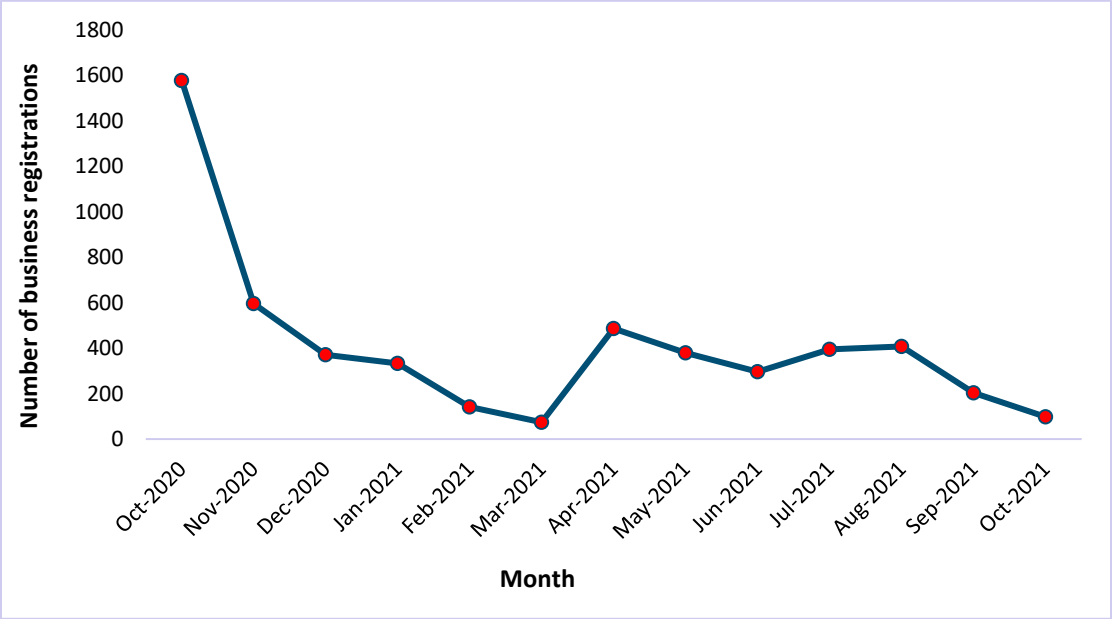


Figure 2: Number of businesses registered on the OHSS platform for the reporting period 1 October 2020- 31 October 2021.

Based on current business registration on OHSS, employees from elementary occupations (19%) (cleaners, mining, construction manufacturing, transportation, agriculture, forestry and fishery), sales and service workers (19%) (cashiers, sales, care workers) comprised the largest proportion of jobs registered followed by clerical and support workers (16%) (customer service clerk, general office clerks, and other clerical support workers) (**Figure 3**).

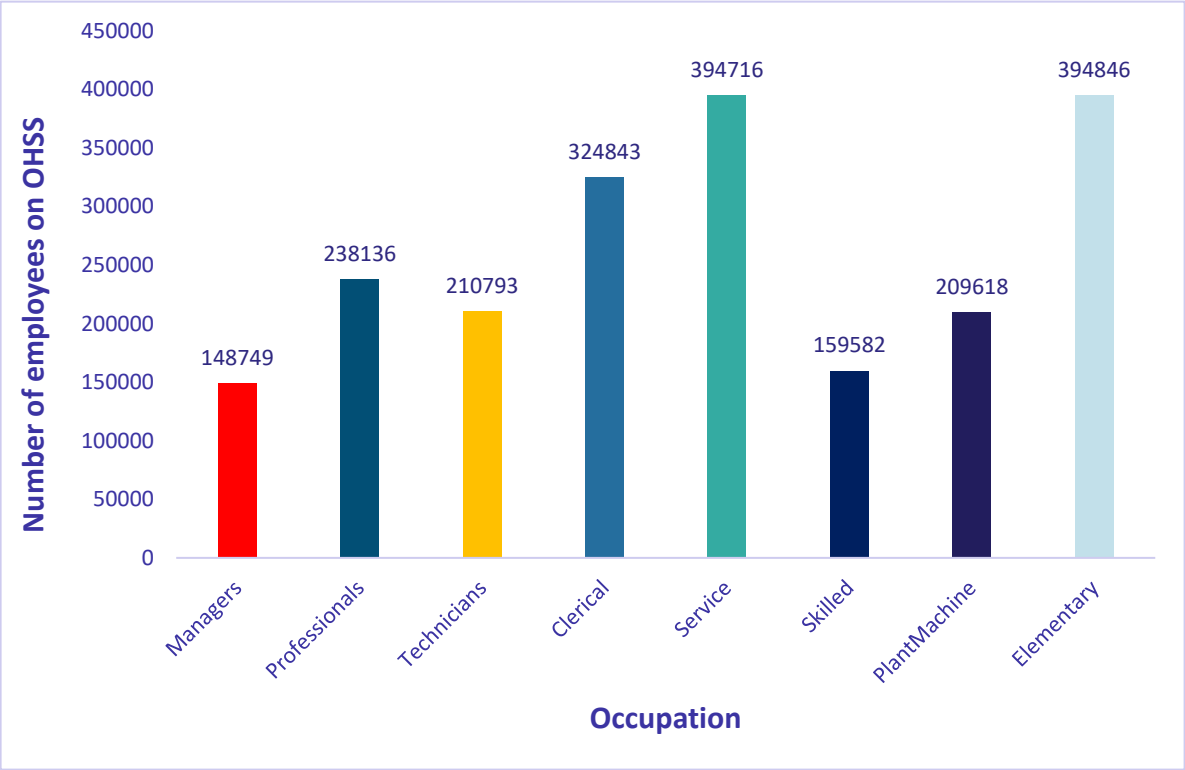


Figure 3: Number of employees per occupational group registered on the OHSS platform

1.2. COVID-19 Positive cases

There was a total of 4,403 COVID-19 positive cases that were reported on the OHSS platform during this period. Based on the provincial distribution of workplace registration on OHS and those companies that submitted positive case data, the analysis showed that the majority of the COVID-19 cases were reported from Gauteng (1494/3657; 41%); followed by the Western Cape (639/3657; 17%) and KwaZulu-Natal (446/3657; 12%) (**Figure 4).**

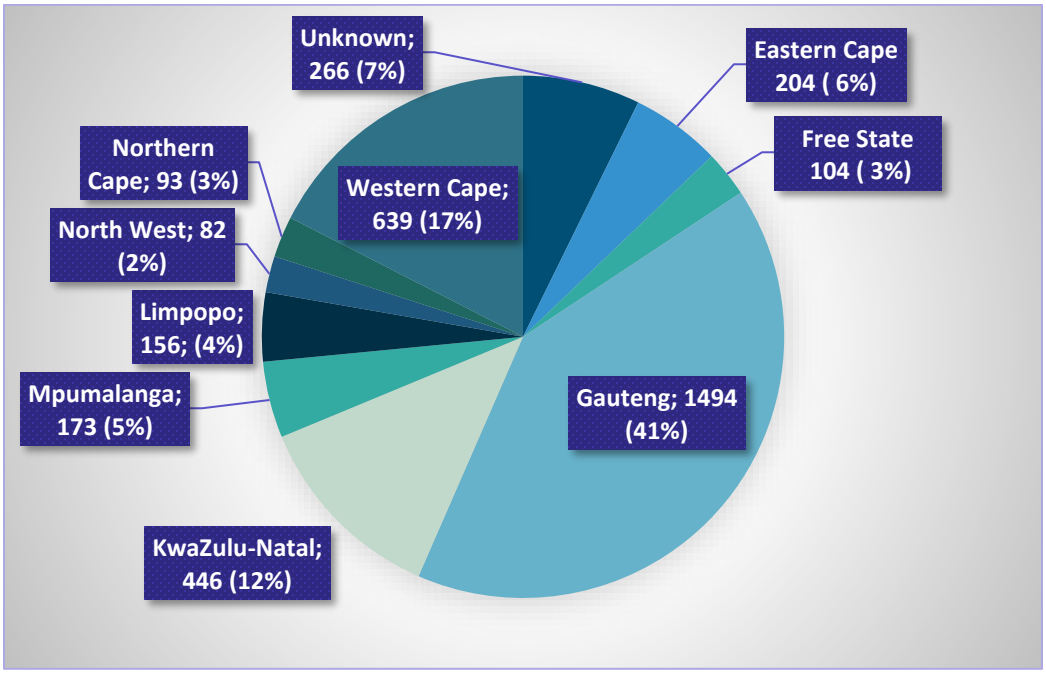


Figure 4: Number of COVID-19 positive cases across the provinces in South Africa reported on OHSS (n=3,657)

Figure 5 shows the number of employees reported to OHSS that tested positive for COVID-19. An increase in reported COVID-19 cases was seen between the month of December 2020 and January 2021, which coincided with the second wave in South Africa. The figure also shows increased number of COVID-19 positive cases in workplaces were reported around December 2020 and January 2021, the second wave of the pandemic in SA and during May 2021 and June 2021, was the third wave of the pandemic in SA.

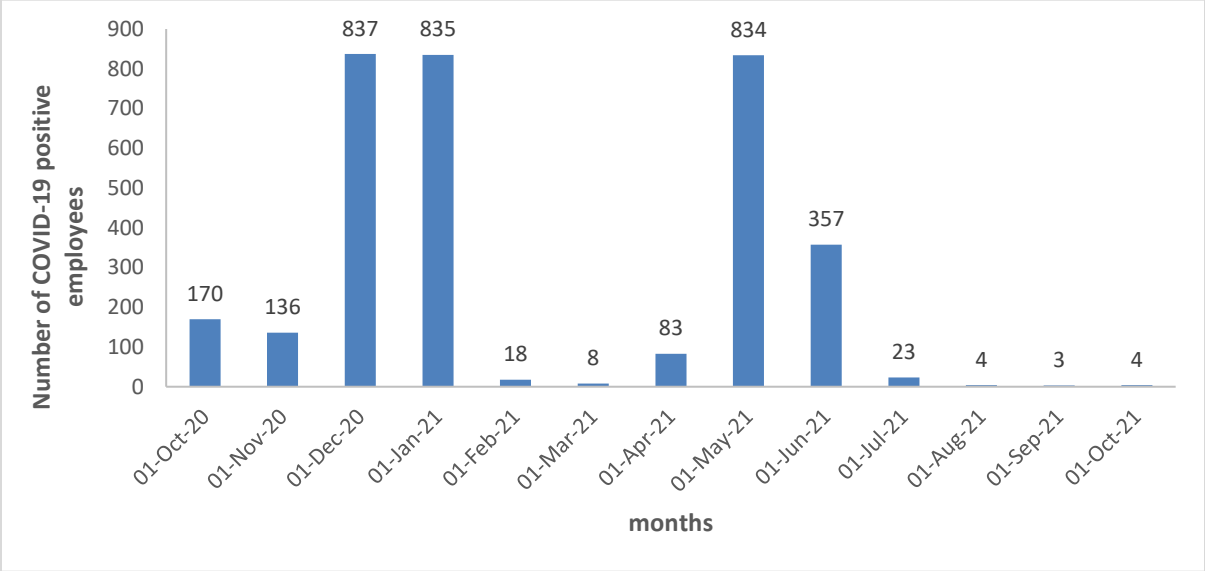


Figure 5: Number of reported COVID-19 positive employees by epidemiological month in South Africa -1 October 2020 to 31 October 2021 (n= 3,657)

Among the reported positive cases, 67% (2249/3342) were females and 33% (1093/3342) were males. A large proportion (42.6%) of cases belonged to the age group 30 – 39.9 years (**Figure 6**). The median age of reported COVID-19 positive cases on OHSS was 34 years (IQR 28-40 years).

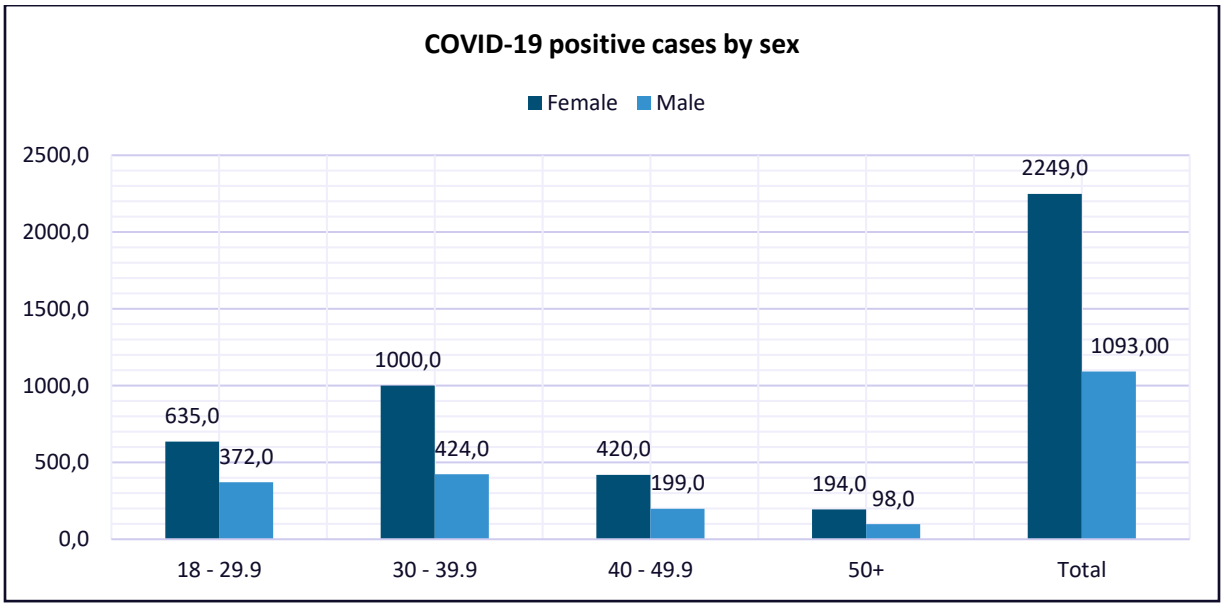


Figure 6: Number of COVID-19 positive cases reported by age group and sex (n=3,342)

The proportion of employees submitted on OHSS comprised of elementary occupations (20%), sales and service workers (18%) and clerical and support workers (16%). Of the reported COVID-19 positive cases reported, service workers (989/3724; 27%), professionals (979/3724;26%) and clerical support workers (895/3724; 24%) were the most common occupational groups with positive cases (**Figure 7**).

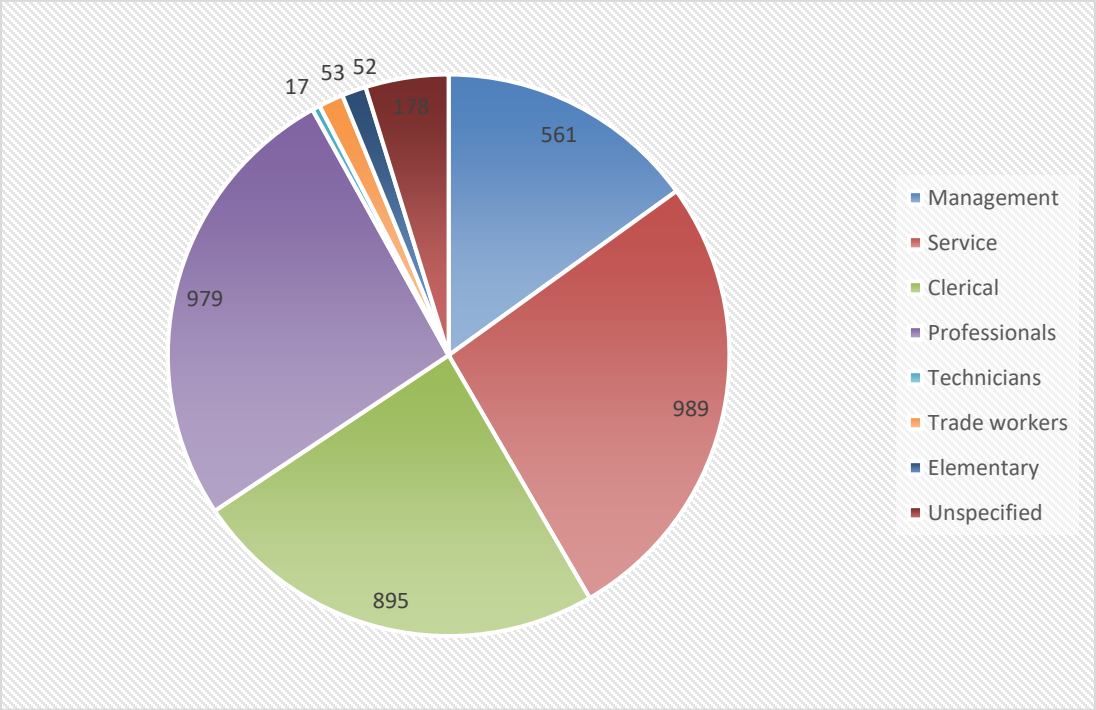


Figure 7: Number of COVID-19 positive cases reported on the OHSS in different job categories (n=3,724).

1.3. Symptoms Screening

Approximately 13083 employees of the 459768 employees who were reported by the employers were screened symptomatic. This was a proportion of 29% of employees reported with one or more of COVID-19 symptoms. The most common symptoms reported included lack of smell or taste (22%), followed by sore throat, muscle pains, sore throat and headache (15% each) (**Figure 8**). The proportion of employees who tested positive for COVID-19 and reported having symptoms was 72.5% (1 479/2041).

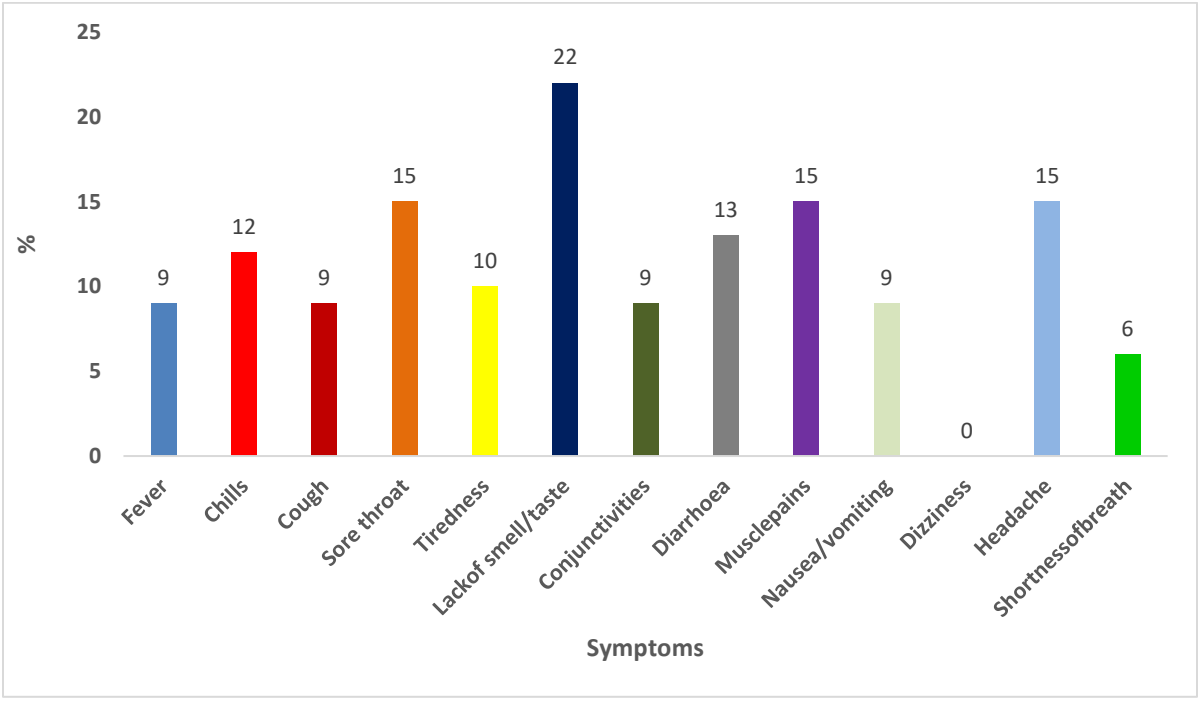


Figure 8. Prevalence of COVID-19 related symptoms reported by employees in routine symptom monitoring at workplaces.

1.4. Vulnerability

Among the workers with reported comorbidities (n=20,343), chronic lung diseases comprising of Tuberculosis (TB) and Chronic obstructive pulmonary diseases (COPD) (32%) was the most common reported by employees, followed by hypertension (3%) and pulmonary asthma (2%) (**Figure 9**). Among employees with information of vulnerability status, 60% (12169/20343) were females and 39% (7989/20343) were males.

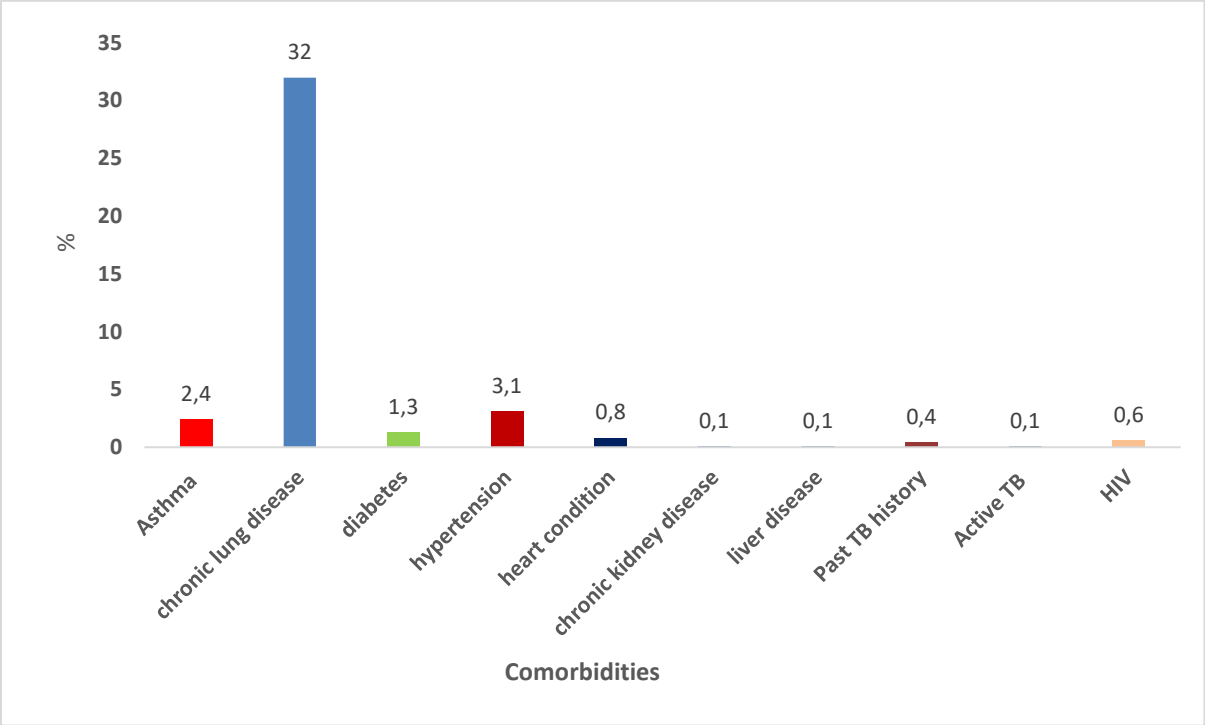


Figure 9: Prevalence of comorbidities reported for employees (n=20,343)

Figure 10 shows occupational groups reporting vulnerability status. The prevalence rate of vulnerability status is 0.5% for managers (1751/297411*100); 0.4% for technicians (1721/421489*100), 0.3% for professionals (1267/476178*100) and for clerical support workers (1874/649595*100), 0.2% for sales and service workers (1530/789173*100) and 0.04% for elementary workers (391/789554*100).

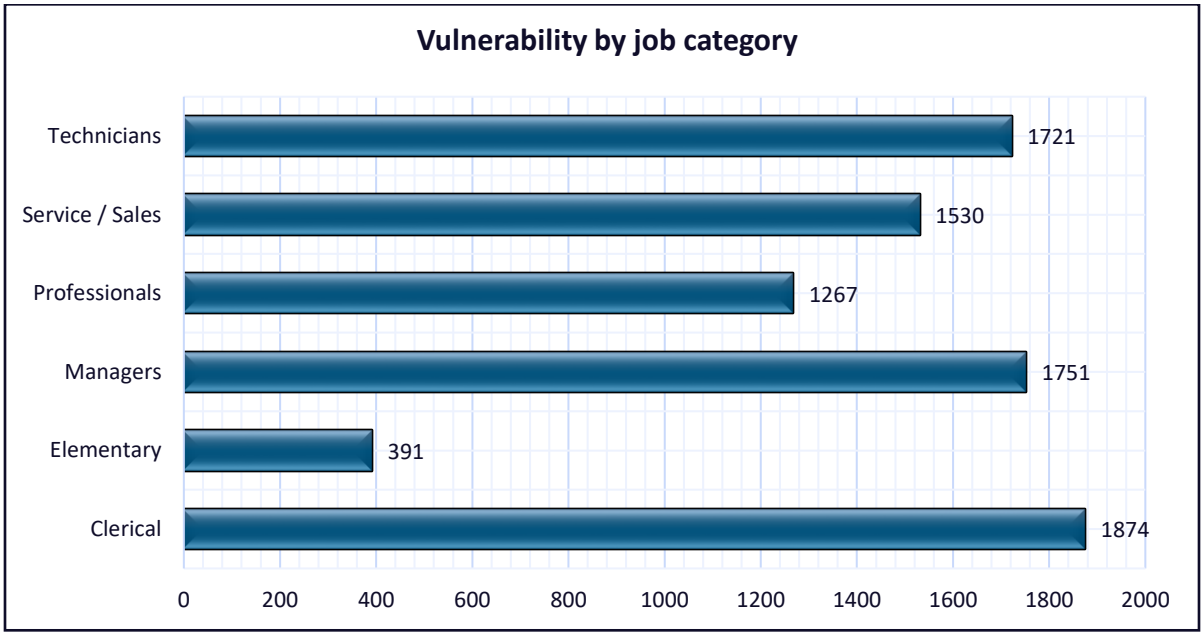


Figure 10: Occupational groups reporting vulnerability status 1 October 2020-31 October 2021.

1.5. Post infection outcome

During the 13-month period, 7744 employees were hospitalized. Among those with an outcome status, 13% (47/364) had died and 87% (317/364) were discharged. The Case fatality rate (CFR) among employees (number of deaths / number of confirmed COVID-19 cases X 100) was 1.2%.

DISCUSSION

Workplace reporting of COVID-19 did not increase substantially since the last report in March 2021 (**Figure 2**). It is still a challenge to get workplaces to comply with the Department of Employment and Labor OHS directive in registering the companies and submitting COVID-19 data. Nonetheless, the OHSS as a COVID-19 surveillance system was able to provide insight into the COVID-19 infection spectrum in South African workplaces[4]. Even though our data is biased by the low registrations and consistent reporting by businesses, we were able to compare which province has the highest COVID-19 positive cases, which sector reported the highest proportion of COVID-19 cases and which occupational groups were at high risk of COVID-19 infection based on the data collected. While workplaces in elementary occupations constituted a large group of registered occupation on OHSS, they did not report a high proportion of positive cases or vulnerability status. This may be due to workplaces in these occupation not consistently reporting data to OHSS. Service workers, professionals and clerical and support workers were common occupational groups reporting COVID-19 positive cases. These occupations may be prone to higher transmission of infection due to the nature of their work that required close interaction with others. With COVID-19 interventions and infection control strategies being put into place in workplaces such as sanitation stations, use of facial masks, social distance between employee workstations, as well as high risk contact tracing following infection for immediate isolation and daily screening of employees before entering workplaces, we anticipate that the number of COVID-19 positive cases in workplaces to decline.

CONCLUSION

With the collected data, we were not able to determine the impact of COVID-19 on the various industrial sectors due to poor registration and data submission by workplaces during the 13-month reporting period. In addition, while registered businesses on the OHSS account for about 1% of registered workforce in SA, the collected data is not sufficient to draw conclusion on human resource and economic impact of COVID-19 in workplaces.

ADDITIONAL COMMENTS

- The OHSS was initiated as a COVID-19 reporting tool in workplaces and thus exist because of the Disaster Management Regulations and the Department of Employment and Labour Direction. Changes in the directive will therefore have a major influence on workplace reporting for COVID-19 data. It is therefore anticipated that once the disaster management regulation comes to an end and the direction for COVID-19 reporting in the workplace is removed companies may no longer be obligated to submit data. For this reason, the OHSS may be adapted for other purposes in the future. The NIOH will however still encourage businesses to continue to register on the OHSS business management portal.

- Having a database of registered workplaces within SA, the OHSS has the potential to continue to be used as a platform to provide denominator data for sectors within South Africa. This will require strategies to convince current workplaces and new businesses to register on the OHSS business management site.

LIMITATIONS

The data presented here is dependent on employers reporting the legally required information, which currently stands at 12.2% of all registered business with SA, thus the data presented in this report should be interpreted considering that businesses that had registered on the OHSS portal may not have been regularly reporting their COVID-19 data as per the legal requirement. Non-compliance by workplaces to register and submit COVID-19 data was a huge limitation for OHSS as reporting tool for COVID-19 infection in SA workplaces. Thus, the data presented does not represent the true disease burden experienced by workers in the country. To understand the true impact of COVID-19

infection in SA workplaces, we require appropriate denominators. The under-reporting of data despite its legal requirement has recently been addressed by engaging with the compensation Fund, and the Unemployment Insurance Fund requiring mandatory reporting for businesses to qualify for TERS benefits for their workers.[3] Further data from the OHSS is available on the on-line dynamic dashboard.[4]

[1] https://www.nioh.ac.za/home/national-resources-directives-guidelines/.
[2] http://www.statssa.gov.za/publications/P0211/P02114thQuarter2020.pdf.

[3] https://uifecc.labour.gov.za/covid19/loginJsp

[4] https://datastudio.google.com/embed/u/0/reporting/bd5b8307-e349-418d-af3b-39b34bff6607/page/jfi1B

Acknowledgements

Funding donors

FORD Funding for sponsoring the project.

NHLS

The NIOH would like to thank the members of the OHSS team.

Scientific Committee:

Prof N Naicker (National Institute for Occupational Health, University of Johannesburg)
Prof M Jeebhay (University of Cape Town)
Prof R Naidoo (University of KwaZulu Natal)
Prof M Zungu (National Institute for Occupational Health)
Dr S Kgalamono (National Institute for Occupational Health)
Dr N Tlotleng (National Institute for Occupational Health)
Data management and Technical Committee:
Dr O Samuel (National Institute for Occupational Health)
Dr J Mtsweni (Council for Scientific and Industrial Research)
Mr M Rambau (National Institute for Occupational Health)
Mr R Khutlang (Council for Scientific and Industrial Research)
Mr H Le Roux (Council for Scientific and Industrial Research)
Mr F McKenna (National Institute for Communicable Diseases)
Legal team:
Mr Karl Blom (Webber Wentzel)
Ms Kate Collier (Webber Wentzel)
OHSS operational team
Mr V Ntlebi (National Institute for Occupational Health)
Sr G Buffel (National Institute for Occupational Health)
Ms A Jekwa (National Institute for Occupational Health)
Dr H Maso (National Institute for Occupational Health)
Ms L Monaiwa (National Institute for Occupational Health)

OUTPUTS

2021- 2022

1. Epidemiology Conference of Occupational Health (EPICOH) 2021. *Poster presentation.* Development and challenges of a National Occupational Health Surveillance System for COVID-19 in the workplace. *BMJ Occupational and Environmental Medicine*. http://dx.doi.org/10.1136/OEM-2021-EPI.237.
2. 33rd International Conference on Occupational Health (ICOH). 2022. Poster presentation. National Occupational Health Surveillance System for Monitoring COVID-19 disease in South African workplaces. www.icoh2022.net.

References

1. Team E. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020. China CDC weekly. 2020;2(8):113.
2. Lan F-Y, Wei C-F, Hsu Y-T, Christiani DC, Kales SN. Work-related COVID-19 transmission in six Asian countries/areas: a follow-up study. PloS one. 2020;15(5):e0233588.
3. George R, George A. COVID-19 in South Africa: An occupational disease. SAMJ: South African Medical Journal. 2020;110(8):705-.