

Costs and outcomes associated with COVID-19 hospitalisation in the South African public sector

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BACKGROUND AND OBJECTIVES

- The first wave of COVID-19 infections in South Africa began in March 2020, peaked in July of 2020 and ran until approximately the end of October 2020.
- Gauteng, South Africa's most populated province, had the highest incidence risk of 218.8 cases per 100 000 during the first wave and reported the largest number of COVID-19 admissions and deaths within this period.
- Estimates of the cost of COVID-19 care during this period, which was characterized by increasing cases and hospital admissions, are critical for building responsive and resilient health-systems
- There is however a dearth of cost estimates for pandemic related hospitalisation in the South African public sector, which bore a significant proportion of the COVID-19 healthcare burden.

This study aims to understand the cost per patient day (PPD) and associated outcomes for COVID-19 related hospitalization during the first wave in South Africa at two academic hospitals in Gauteng

RESULTS

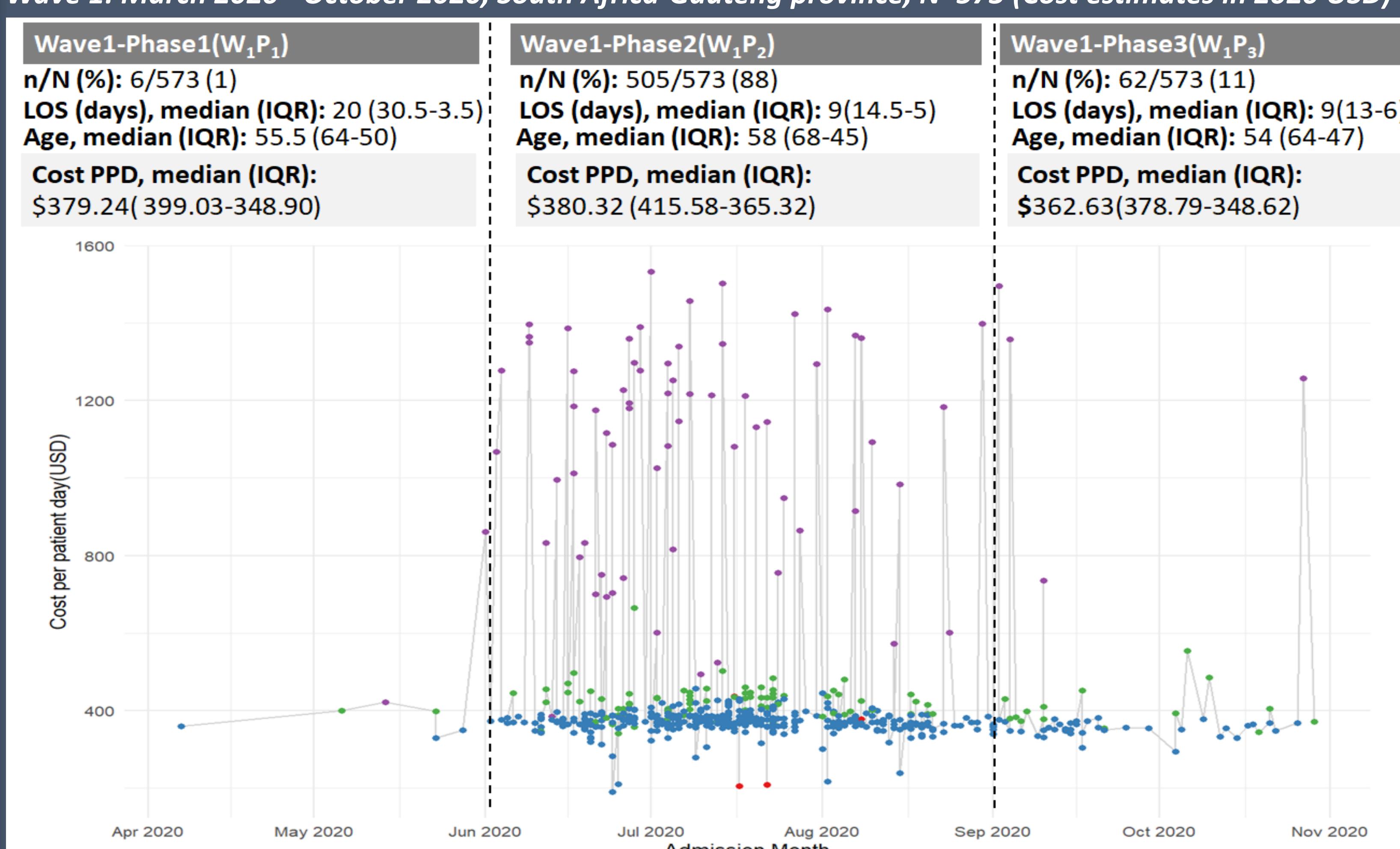
Sample size	573
Female:	52%
ICU utilisation:	12%
Median age:	57 years
Invasive mechanical ventilation(IMV):	2%
Median cost PPD:	\$1185.43
Mortality:	31%
≥1 chronic conditions:	84%
Median cost PPD:	\$381.17

Table 1: Ward based statistics and costs (2020 USD) per patient day (PPD)

	General Ward	High-care	ICU
Admissions, n/N (%)	499/573 (87)	121/573 (21)	71/573 (12)
LOS(days), median (IQR)	7 (12-4)	2 (5-1)	7 (13-3)
Ward based oxygen support , n/N (%)	367/499 (74)	63/121 (52)	52/71 (73)
Ward based laboratory tests , n/N (%)	390/499 (78)	93/121 (77)	55/71 (77)
Oxygen support , Median cost PPD (IQR) [for the subset of patients receiving ward based O2]	\$8.19 (\$14.90-\$3.74)	\$12.29 (\$30.73-\$6.15)	\$35.00 (\$57.87-\$7.50)
Laboratory, Median cost PPD (IQR) [for the subset of patients receiving ward based labs]	\$10.64 (\$17.68-\$6.07)	\$24.87 (\$65.96-\$13.05)	\$26.96 (\$41.25-\$11.71)
Staff, mean cost PPD (SD)	\$308.49 (0)	\$368.57 (0)	\$1330.68 (0)
In-hospital drugs, median cost PPD (IQR)	\$3.7 (\$6.95-\$2.59)	\$6.12 (\$12.15-\$3.07)	\$5.26 (\$9.07-\$3.11)
Diagnostics and Hemodialysis, median cost PPD (IQR)	\$1.93 (\$3.37-\$1.10)	\$1.93 (\$4.59-\$0.94)	\$1.49 (\$2.62-\$0.85)
IPC , mean cost PPD (SD)	\$36.12 (0)	\$53.70 (0)	\$71.29 (0)
Overheads, median cost PPD (IQR)	\$10.22 (\$22.19-\$3.10)	\$3.10 (\$10.22-\$2.91)	\$10.22 (\$13.85-\$2.91)
Total cost PPD, median(IQR)	\$382.99 (\$395.32-\$371.62)	\$472.21 (\$526.39-\$448.44)	\$1466.36 (\$1520.79-\$1421.70)

RESEARCH SNAPSHOT

Figure 1: COVID-19 hospitalisation: Cost per patient day (2020 US dollars) by highest-level of care reached
Wave 1: March 2020 - October 2020, South Africa-Gauteng province, N=573 (Cost estimates in 2020 USD)



METHODOLOGY

Study population

Patients with laboratory confirmed COVID-19 infection aged ≥18 years hospitalised during the first wave (March 2020 – October 2020) at two tertiary-hospitals in South Africa's Gauteng province.

Sampling strategy

- Random and purposive sampling used.
- Purposive sampling targeting all patients requiring oxygen support or ICU based care
- Only patients with a known outcome (died or discharged alive) were included in the study, with admission data further restricted to the first COVID-19 related hospitalization.

Data collection

- Retrospective medical record review

Data analysis

- Bottom-up costing from the provider perspective was based on patient-level resource usage.
- Cost estimates are reported in 2020 United States Dollar (USD)

DISCUSSION AND CONCLUSIONS

- This study is the first to estimate the resources necessary for COVID-19 inpatient care based on real world data.
- It has shown that human resource costs were the largest cost driver with costs varying by level of care required and presence of comorbidities.
- Understanding the hospital costs of COVID-19 patients and related sub-groups is essential to evaluating the economic impact of the pandemic on healthcare costs.
- These cost estimates may help in planning for future catastrophic health events.

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