Continued demographic shifts in hospitalised COVID-19 patients from migrant workers to a vulnerable and more elderly local population at risk of severe disease

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INTRODUCTION

- In the early months of the COVID-19 pandemic in Singapore, the vast majority of infected persons were migrant workers living in dormitories who were young and with few medical co-morbidities

- In 2021, with the Delta and Omicron waves, this shifted to the more vulnerable and elderly population within the local community

- We examined trends amongst the hospitalised cases, in order to demonstrate changes in disease severity in association with the changing demographic pattern in the epidemics.

METHOD

Patient recruitment
- Consecutive patients (n=1781) with PCR-proven COVID-19 were examined
- Hospitalised in a tertiary centre for clinical management and evaluation
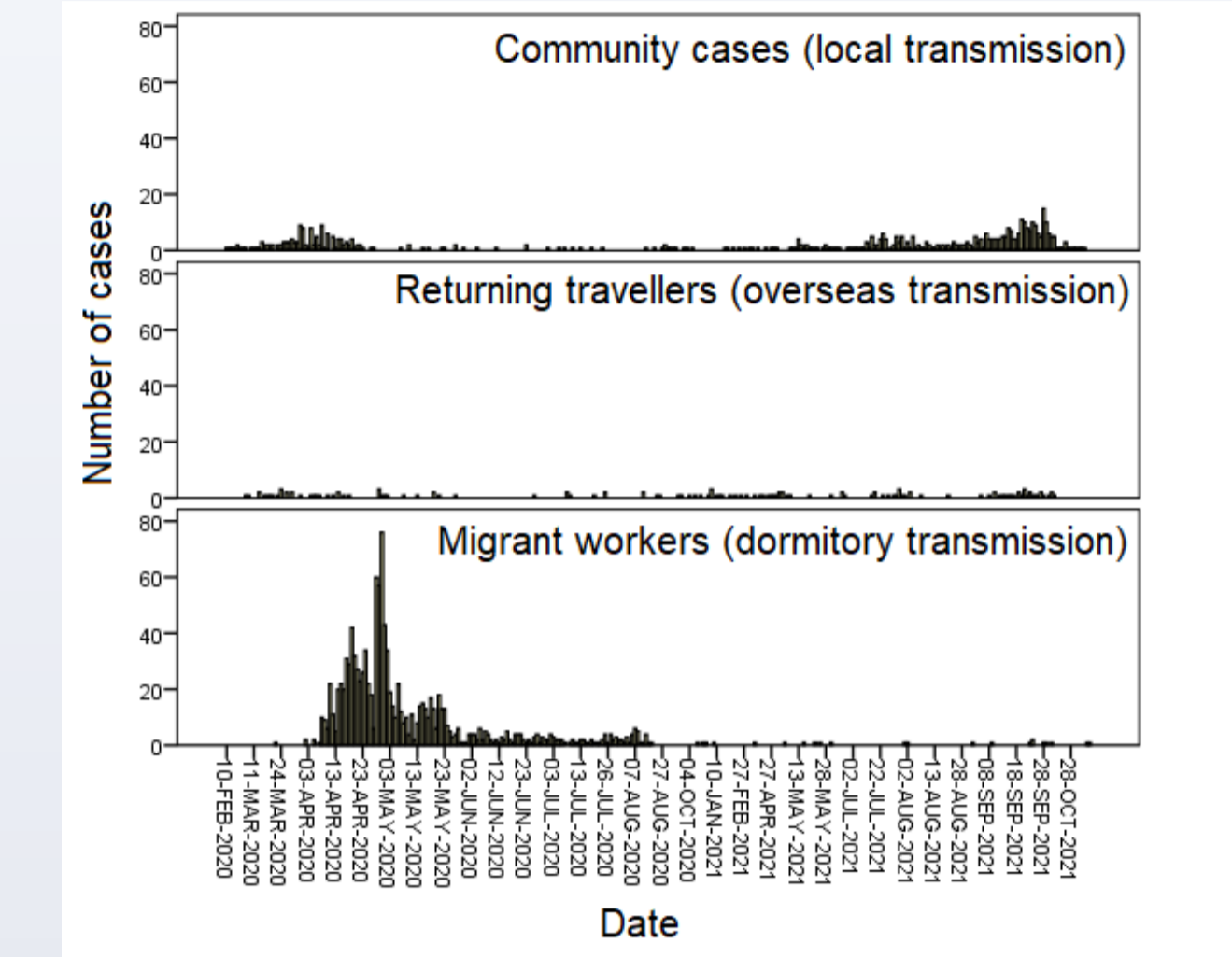
Data collection
- Divided based year of admission (2020 or 2021)
- Clinical and demographic background data collected, as well as clinical outcomes
- Adverse composite clinical outcomes were defined as either mortality, intensive care admission, need for supplemental oxygenation
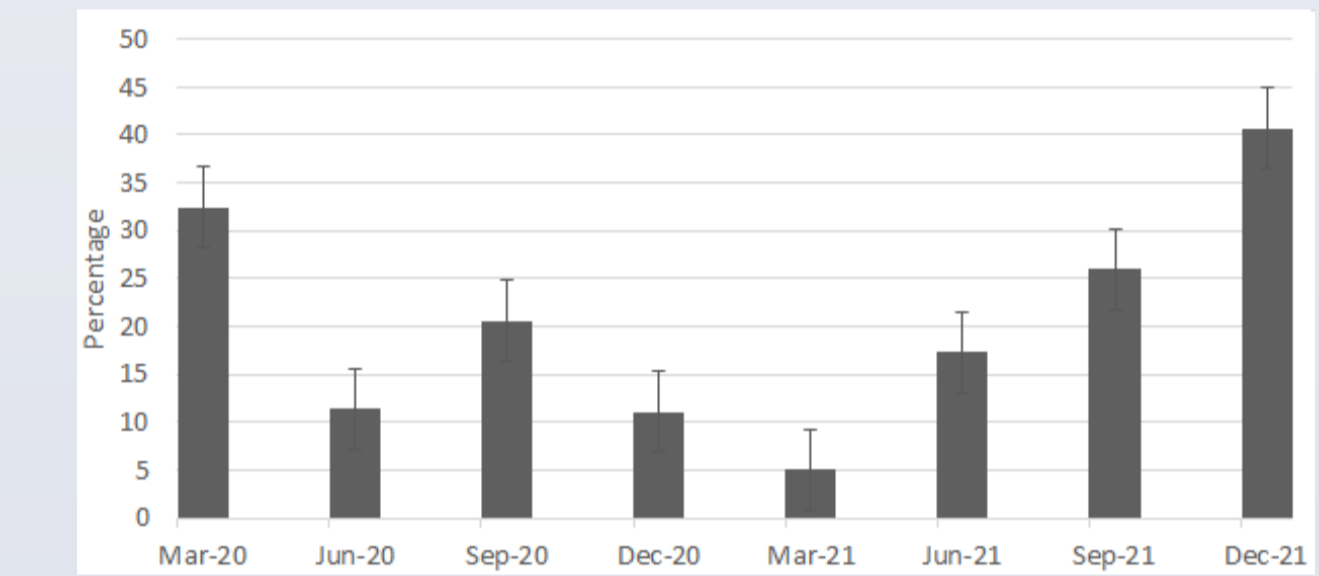
Statistical analysis
- Independent samples Student's t-tests and chi-squared tests were employed to compare between groups
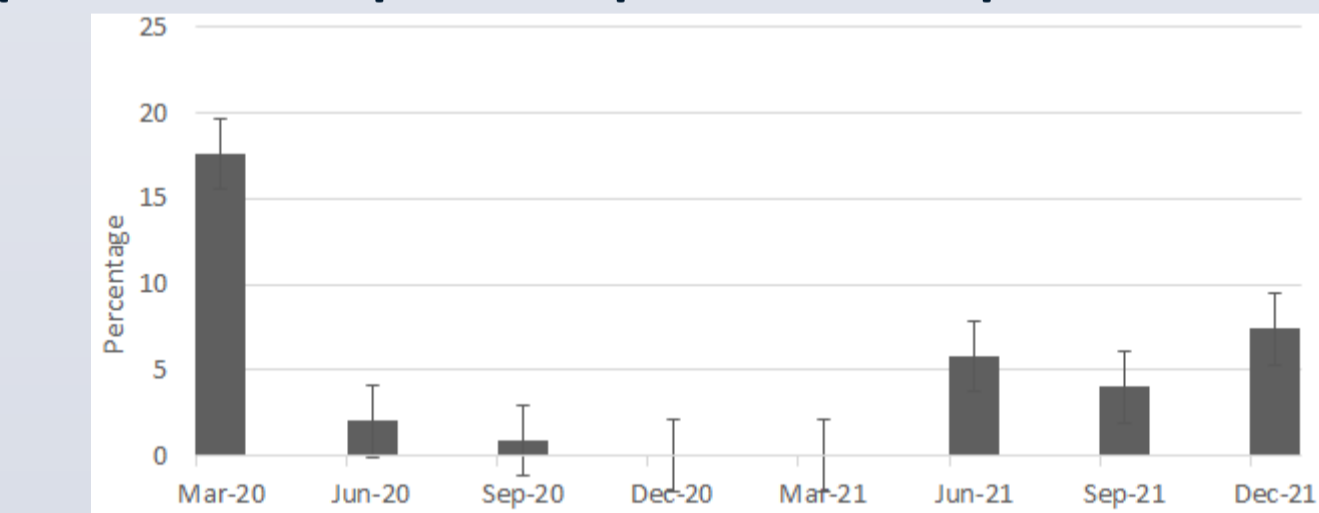- P-value of <0.05 was considered significant

RESULTS

Parameter	Admission for COVID-19 in 2020 (n=1359)	Admission for COVID-19 in 2021 (n=422)	p-value
Demographics			
Age (years)	39.4 (±11.3)	60.0 (±19.7)	<0.001
Body mass index (kg/m²)	25.8 (±5.1)	26.0 (±5.8)	0.742
Sex (male)	1231 (90.8%)	195 (46.2%)	<0.001
Hypertension	133 (9.8%)	121 (28.7%)	<0.001
Hyperlipidaemia	74 (5.4%)	99 (23.5%)	<0.001
Diabetes mellitus	75 (5.5%)	55 (13.0%)	<0.001
No prior medical conditions	1148 (84.5%)	251 (59.5%)	<0.001
Vaccinated against COVID-19	0 (0.0%)	273 (64.7%)	<0.001
Total white cell count (x10⁹/L)	6.88 (±2.28)	6.22 (±2.28)	<0.001
Absolute lymphocyte count (x10⁹/L)	2.00 (±1.45)	1.48 (±0.74)	<0.001
Serum C-reactive protein (mg/dL)	12.5 (±26.4)	23.1 (±38.0)	<0.001
Serum ferritin (µg/L)	196.1 (±233.5)	254.1 (±444.7)	0.001
Serum lactate dehydrogenase (U/L)	420.6 (±283.3)	418.2 (±168.1)	0.881
Length of hospital stay (days)	7.8 (±9.1)	7.4 (±7.9)	0.356
Requiring supplemental oxygenation	40 (2.9%)	46 (10.9%)	<0.001
Pneumonia	180 (13.2%)	105 (24.9%)	<0.001
Requiring intensive care	37 (2.7%)	18 (4.2%)	0.110
High flow nasal cannula	2 (0.1%)	9 (2.1%)	<0.001
Myocarditis	8 (0.6%)	4 (0.9%)	0.494
Stroke	4 (0.3%)	1 (0.2%)	0.999
Acute kidney injury	60 (4.4%)	15 (3.6%)	0.491
Death	5 (0.4%)	8 (1.9%)	0.004

Demographic shift in COVID-19 cases over time

Proportion of hospitalised patients with pneumonia over time

Proportion of hospitalised patients requiring ICU over time

DISCUSSION AND CONCLUSION

- Majority of cases in 2020 were young and fit migrant workers from dormitories, while the cases in 2021 were the predominantly more vulnerable and elderly local population

- This placed a greater strain on healthcare resources with a greater proportion having pneumonia and requiring intensive care

REFERENCES

1. Ngiam JN, Chew N, Tham SM, Beh DL, Lim ZY, Li TYW, Cen S, Tambyah PA, Santosa A, Sia CH, Cross GB. Demographic shift in COVID-19 patients in Singapore from an aged, at-risk population to young migrant workers with reduced risk of severe disease. Int J Infect Dis. 2021 Feb;103:329-335.
2. Ngiam JN, Chew NWS, Tham SM, Lim ZY, Li TYW, Cen S, Tambyah PA, Santosa A, Sia CH, Cross GB. Utility of conventional clinical risk scores in a low-risk COVID-19 cohort. BMC Infect Dis. 2021 Oct 24;21(1):1094.