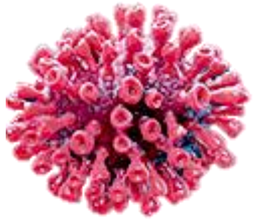

C-23

Clinical Characteristics and Risk Factors for Severe COVID-19 infections in Malaysia

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Introduction

- COVID-19 pandemic emerged in China late 2019[1]
- Malaysia's 1st case on 25 January 2020[2]
- Policy of contact tracing and hospitalising of patients, regardless of severity

Aim

- To conduct a nationwide multi-centre observational study of hospitalised patients for COVID-19
- To determine risk factors associated with disease severity

Methodology

- Cohort study included adult patients (aged ≥12 years) with RT-PCR confirmed COVID-19
- Admitted to **18 hospitals** between Feb 1 and April 30, 2020
- Disease stage classified as **mild (Stage I-III)** and **severe (Stage IV-V)**
- Exclusion:
  <12 years old, Missing data ≥90%, PUI, Incomplete outcome

Methodology

Staging [3,4]

Mild COVID-19

- **Stage I** — Asymptomatic
- **Stage II** — Symptomatic without pneumonia
- **Stage III** — Pneumonia without hypoxia

Severe COVID-19

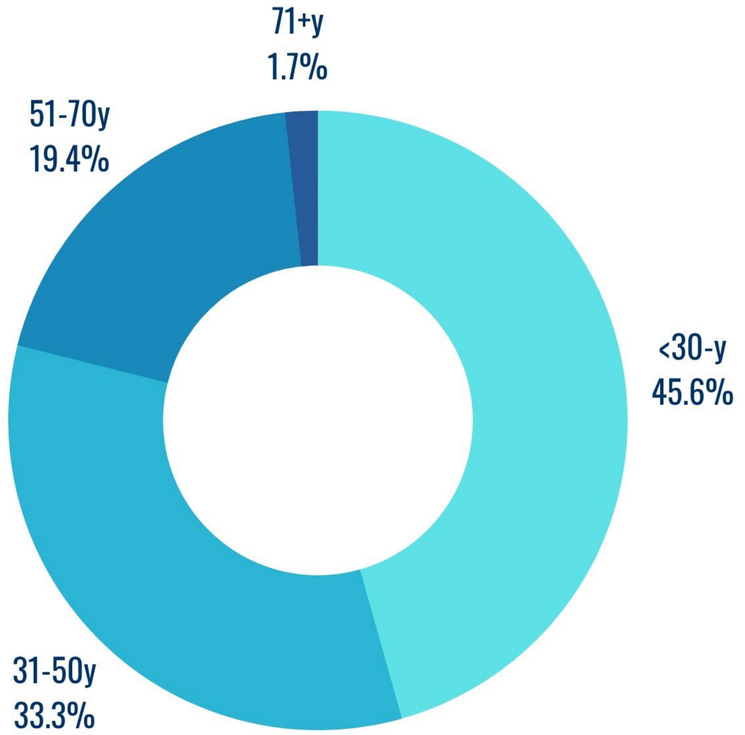
- Pneumonia with hypoxia — **Stage IV**
- Critically ill — **Stage V**

Methodology

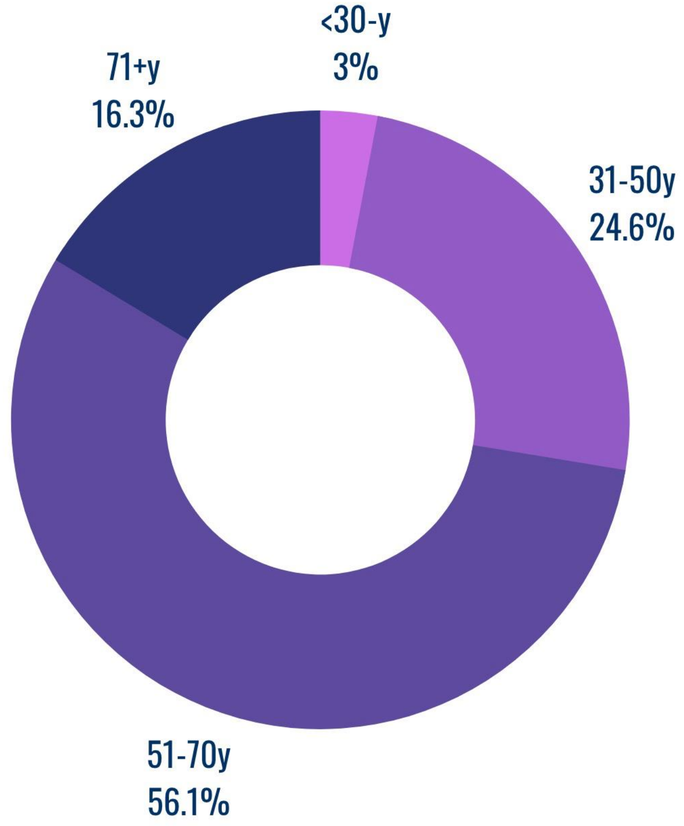
- Case Report Form adapted from ISARIC-WHO[3]
- Clinical characteristics and outcomes entered into REDCap
- Univariate and multivariate regression analyses were used to identify determinants for disease severity.
- Ethics Approval : NMRR-20-580-54339 &
  MREC (KKM/NIHSEC/P20-706)

Results

- 5889 patients
- Median age 34 yrs
- 4221 (71.7%) males
- 5418 (92%) mild
- 193 (3.3%) ICU
- 73 (1.2%) died

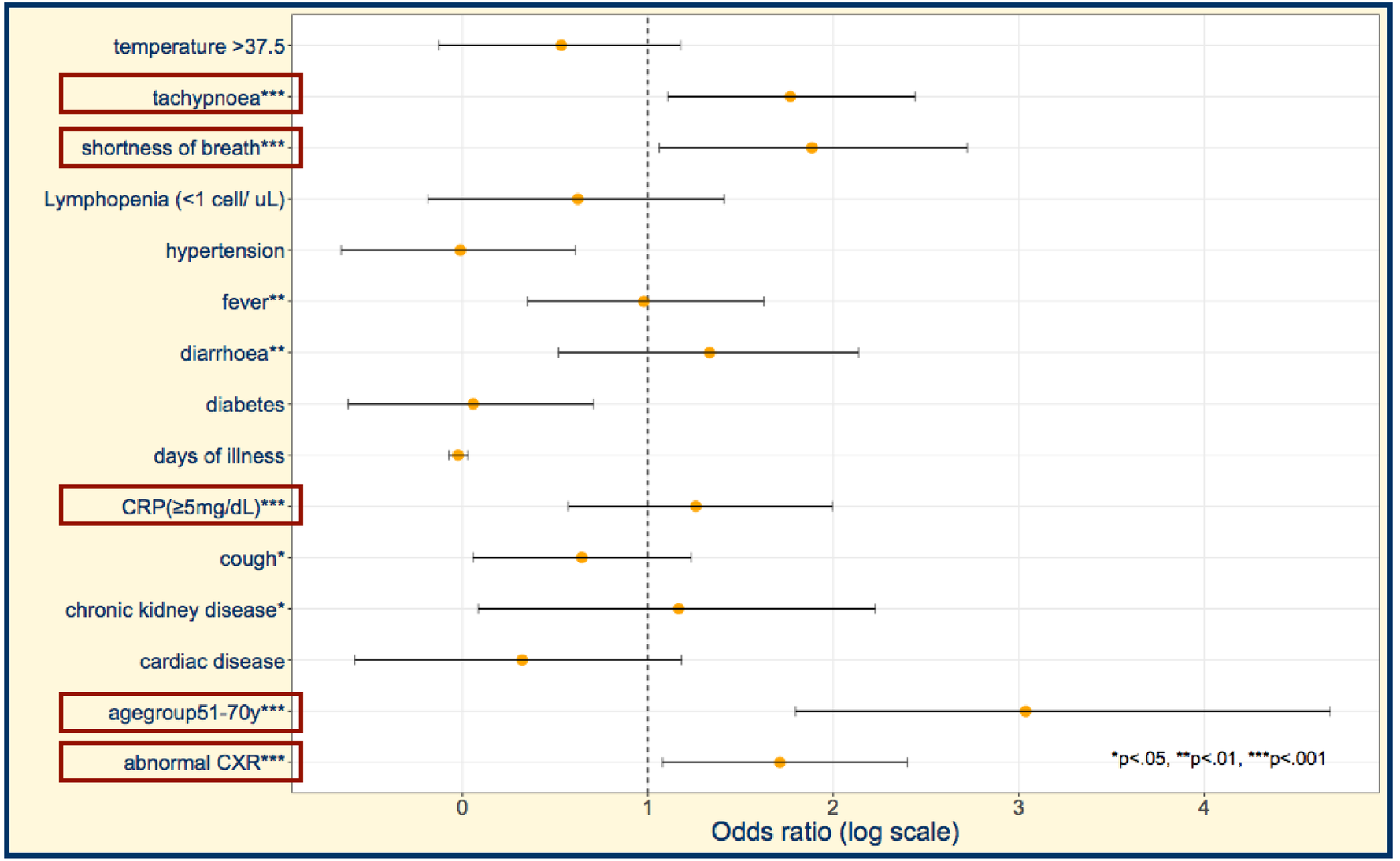


Mild



Severe

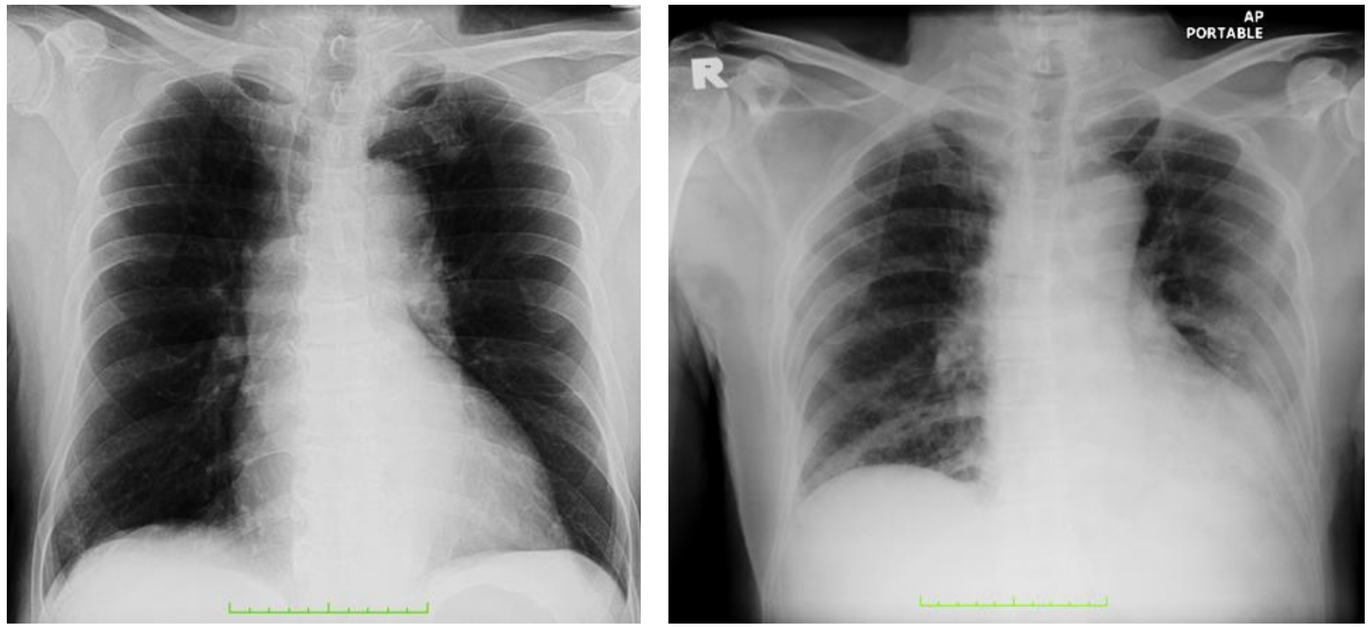
Results


temperature >37.5
tachypnoea***
shortness of breath***
Lymphopenia (<1 cell/ uL)
hypertension
fever**
diarrhoea**
diabetes
days of illness
CRP(≥5mg/dL)***
cough*
chronic kidney disease*
cardiac disease
agegroup51-70y***
abnormal CXR***
*p<.05, **p<.01, ***p<.001
0
1
2
3
4
Odds ratio (log scale)

Results

Determinants for disease severity (p <·05)

- Older age (>50years)
- Fever
- Cough
- Diarrhoea
- Breathlessness
- Tachypnoea
- History of CKD
- High serum CRP (≥5mg/dL)
- Abnormal CXR on admission

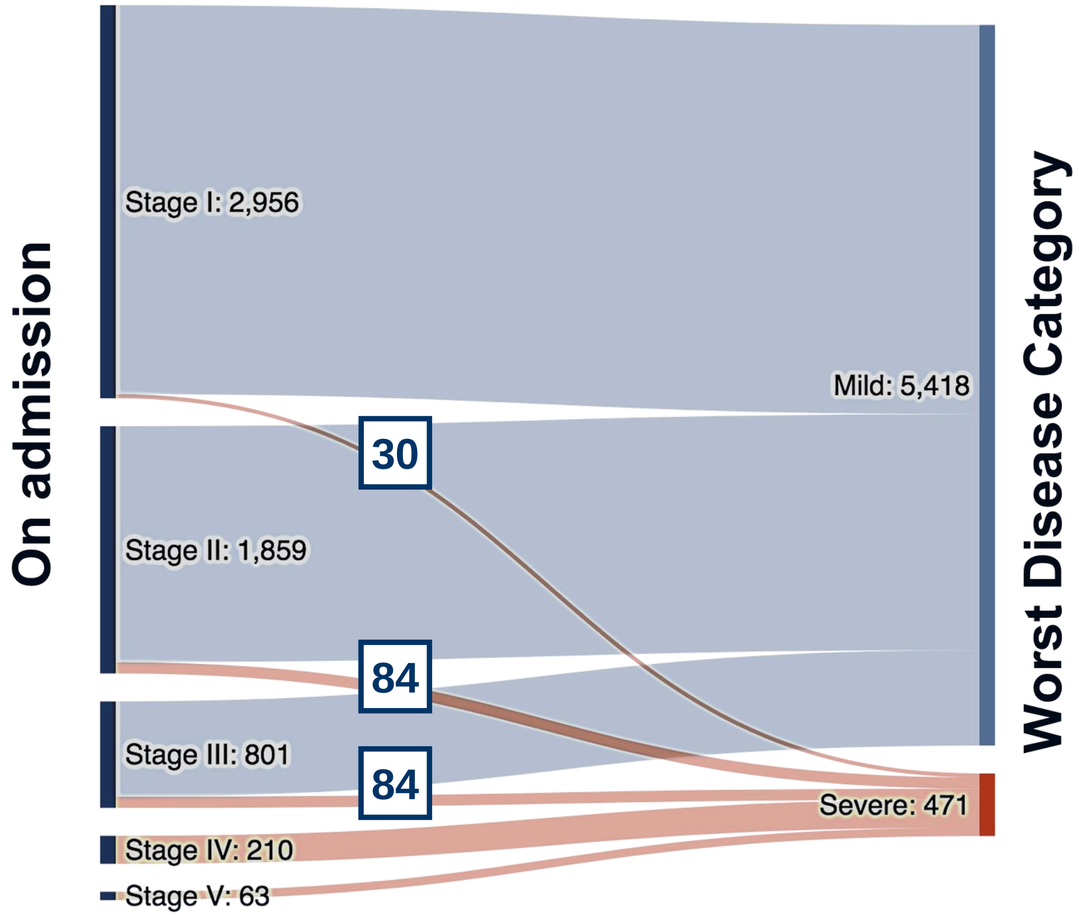


(a) (b)

Figure 1: Baseline Chest Radiograph for two COVID-19 patients
(a) mild COVID-19 disease without progressing into severe
(b) mild on admission but worsened into severe COVID-19 at later stage

Results

Case severity upon admission (p < ·001)



ICU Duration (days)

< (N=142)	14	>= (N=51)
38 (26·8)	on admission	26 (51·0)
80 (56·3)	1 - 5 days	20 (39·2)
17 (12·0)	6 - 10 days	4 (7·8)
7 (4·9)	≥ 11 days	1 (2·0)

p < .05

Discussion

- Provides nationwide clinical data - first in South East Asia.
- Findings are in line with other studies suggesting older age, abnormal CXR, higher CRP, breathlessness and tachpnoea are associated with severe COVID-19.[5-9]
- Hospitalisation allows risk stratification and early ICU access
  - 85% of our ICU admissions occurred within 5 days.
  - In US - median time from onset to ICU admission @ 7 days.[9]

Discussion

- Younger adults had fewer pre-existing condition and mild SARS-CoV-2 infection when compared with older patients.[10,11]
- Observations underline the need of implementing strategies to prevent patient deterioration.[12,13]

Conclusion

Hospitalised individuals with severe COVID-19 disease in Malaysia shared different features than mild cases.

There is a need to consider stratification based on different clinical presentations in the management of COVID-19.

References

1. Guan W-j, Ni Z-y, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. New England Journal of Medicine 2020.

2. Ministry of Health M. COVID-19 (Latest Updates) 20 April 2020 2020. http://www.moh.gov.my/index.php/pages/view/2019-ncov-wuhan.

3. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet (London, England) 2020; 395(10223): 497-506.

4. ISARIC. COVID-19 Clinical Research Resources 2020. https://isaric.tghn.org/COVID-19-CRF/ (accessed March 20, 2020.)

5. Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. JAMA 2020; 323(20): 2052-9.

6. Liu Y, Mao B, Liang S, et al. Association Between Ages and Clinical Characteristics and Outcomes of Coronavirus Disease 2019. European Respiratory Journal 2020: 2001112.

7. Williamson EJ, Walker AJ, Bhaskaran K, et al. OpenSAFELY: factors associated with COVID-19 death in 17 million patients. Nature 2020.

8. Chang MC, Park Y-K, Kim B-O, Park D. Risk factors for disease progression in COVID-19 patients. BMC Infectious Diseases 2020; 20(1): 445.

9. Gupta S, Hayek SS, Wang W, et al. Factors Associated With Death in Critically Ill Patients With Coronavirus Disease 2019 in the US. *JAMA Internal Medicine* 2020.

10. Quadri SA. COVID-19 and religious congregations: Implications for spread of novel pathogens. International Journal of Infectious Diseases 2020; 96: 219-21.

11. Shim E, Tariq A, Choi W, Lee Y, Chowell G. Transmission potential and severity of COVID-19 in South Korea. International Journal of Infectious Diseases 2020; 93: 339-44.

12. Wong JEL, Leo YS, Tan CC. COVID-19 in Singapore—Current Experience: Critical Global Issues That Require Attention and Action. JAMA 2020; 323(13): 1243-4.

13. Lim S, Yoon HI, Song KH, Kim ES, Kim HB. Face masks and containment of COVID-19: experience from South Korea. J Hosp Infect 2020: S0195-6701(20)30302-9.

“We have not won the war yet, but neither have we lost the war.”

– Health Director-General Tan Sri Dato’ Seri Dr. Noor Hisham Abdullah