

SYNOPSIS

04/15/2020

Review of “Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China”

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One-Minute Summary

- This cohort study examined the **association of public health interventions on the epidemiology of laboratory-confirmed coronavirus disease 2019 (COVID-19) cases (n=32,583)** reported in Wuhan, China from December 8, 2019 to March 8, 2020.
- The **median age of patients** was 56.7 years (interquartile range [IQR]: 43.4-66.8), with 74.3% aged 40-79 years. 51.6% of patients were female. **Case rates per 1 million population peaked from Jan 23 to Feb 1** (162.6, 95% confidence interval [CI]: 159.9-165.3).
- **Healthcare workers (HCWs) comprised 4.6% of all patients:**
 - **Case rates per 1 million population were higher in HCWs** (130.5, 95% CI: 123.9-137.2) than in the **general population** (41.5, 95% CI: 41.0-41.9) over the entire study period.
 - Case rates per 1 million population in HCWs peaked from Jan 23 to Feb 1 (617.4, 95% CI: 576.3-658.4).
- Confirmed cases with available clinical severity data (n=32,325) were classified as mild (48.0%), moderate (29.9%), **severe (19.1%) and critical (3.0%):**
 - The proportion of **severe and critical cases decreased over time**, 53.1% (Dec 8, 2019-Jan 9, 2020) to 10.3% (Feb 17-Mar 8).
 - The **risk of severe and critical cases increased with age**, with an adjusted relative risk (aRR) of 0.47 (95% CI: 0.31-0.70) in those <20 years increasing to 3.61 (95% CI: 3.31-3.95) in those ≥80 years compared to those aged 20-39.
 - **Females had a lower risk of severe and critical disease** (aRR = 0.90, 95% CI: 0.86-0.93).
- The **effective reproductive number (R_t) decreased over time, with the addition of multiple public health interventions:** 2.7-3.8 before Jan 26, <1.0 (after Feb 6) and <0.3 (after Mar 1).
- The authors concluded that case rates in HCWs were higher than the general population because of lower awareness and **inadequate use of personal protective equipment** earlier on, followed by a **shortage of resources** later in the study period.

Additional Information

- **Epidemiological periods used in analyses (and interventions implemented at each time period):**
 - Dec 8, 2019 to Jan 9, 2020 (no intervention).
 - Jan 10 to 22 (massive human movement due to the Chinese New Year holiday).

- Jan 23 to Feb 1 (cordons sanitaire, traffic restriction, home quarantine).
- Feb 2 to 16 (centralized quarantine and treatment).
- Feb 17 to Mar 8 (universal symptom survey).
- Cases were laboratory confirmed if they had a positive result by RT-PCR on nasal and pharyngeal swabs.
 - The median number of **days between symptom onset and laboratory confirmation decreased** during the study (26, 15, 10, 6, and 3 for the five periods, respectively).
- The authors used a serial interval of 7.5 days to estimate R_t .
- Considering this was an observational study, causal relationships were not established between public health interventions and COVID-19 epidemiology.
- The authors acknowledge that their study does not take into account changes in case ascertainment throughout the epidemic, with an over representation of severe and critical cases early in the epidemic when there was a shortage in testing.

Reviewer's Comments

- None.

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of "Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China". Toronto, ON: Queen's Printer for Ontario; 2020.

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