

Differentiating Impacts of Non-Pharmaceutical Interventions on Non-Coronavirus-Disease-2019 Respiratory Viral Infections: Hospital-Based Retrospective Observational Study in Taiwan

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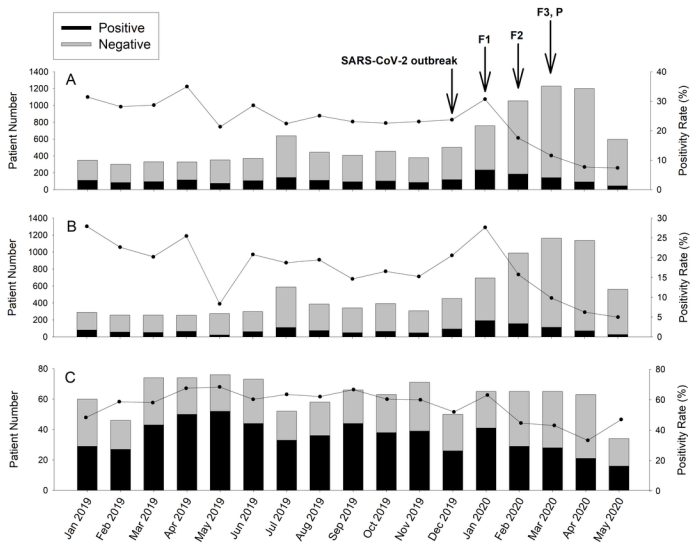
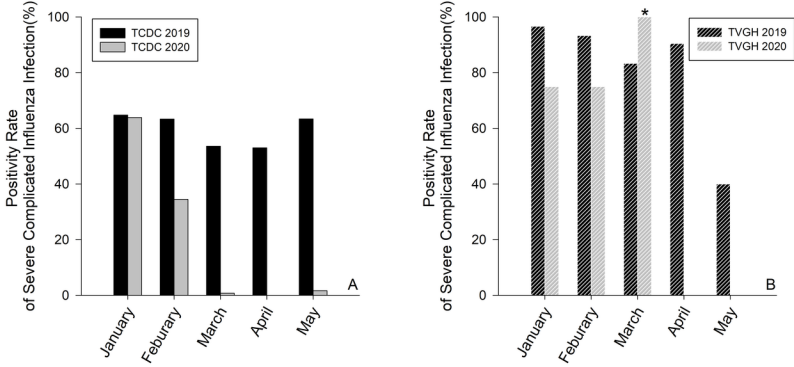
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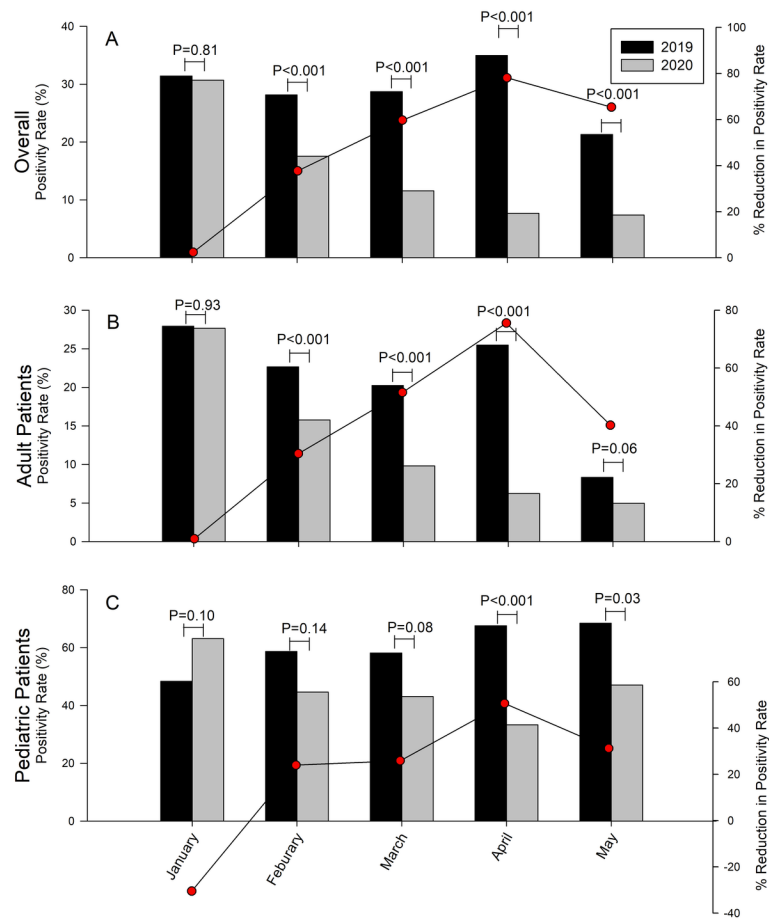
Abstract

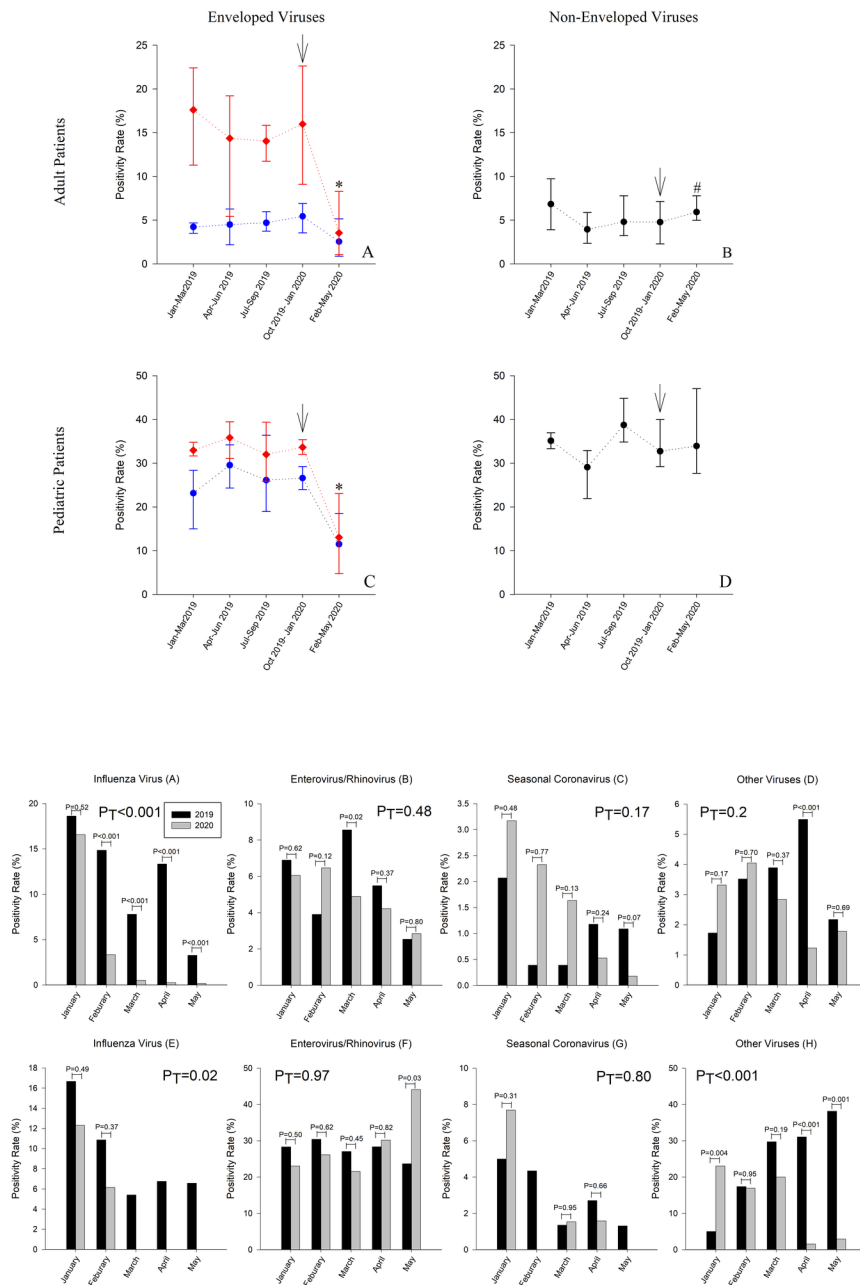
Background Physical distancing and facemask use are worldwide recognized as effective non-pharmaceutical interventions (NPIs) against the coronavirus disease 2019 (COVID-19). Since January 2020, Taiwan has introduced both NPIs but their effectiveness on non-COVID-19 respiratory viruses (NCRVs) remain underexplored. **Methods** This retrospective observational study examined electronic records at a tertiary hospital in northern Taiwan from pre-COVID (January–December 2019) to post-COVID period (January–May 2020). Patients with respiratory syndromes were tested for both enveloped (e.g. influenza virus and seasonal coronavirus) and non-enveloped RVs (e.g. enterovirus and rhinovirus) using multiplex reverse-transcription polymerase chain reaction assays. Monthly positivity rates of NCRVs among adult and pediatric patients were analyzed with comparison between pre- and post-COVID periods. **Results** A total of 9693 patients underwent 12127 multiplex RT-PCR tests. The average positivity rate of NCRVs reduced by 11.2% (25.6% to 14.4%) after nationwide PHIs. Despite the COVID-19 pandemic, the most commonly identified enveloped and non-enveloped viruses were influenza virus and enterovirus/rhinovirus, respectively. Observed reduction in NCRV incidence was predominantly contributed by enveloped NCRVs including influenza viruses. We did not observe epidemiological impacts of NPIs on non-enveloped viruses but an increasing trend in enterovirus/rhinovirus test positivity rate among pediatric patients. Our data were validated using Taiwan's national notification database. **Conclusions** Our frontline investigation suggests that the current NPIs in Taiwan might not effectively control the transmission of non-enveloped respiratory viruses, despite their protective effects against influenza and seasonal coronavirus. Hydrogen peroxide or chloride-based disinfectants should be integrated into national preventative strategies against respiratory viral infections in the post-COVID-19 era.

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