Effectiveness of digital contact tracing for COVID-19: a systematic review

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Background : Digital contact tracing (DCT) was deployed globally during the COVID-19 pandemic however its effectiveness remains poorly understood. We aimed to systematically review DCT effectiveness assessments during COVID-19, how effectiveness was defined and measured, and to identify enabling and inhibiting factors contributing to effectiveness.

Methods : We searched six databases for peer-reviewed research assessing the effectiveness of DCT interventions for COVID-19. Effectiveness was categorized as: end-user, epidemiological, technical, and population-level effectiveness. Study quality was assessed using the Mixed Methods Appraisal Tool. We followed Cochrane and PRISMA guidance.

Findings : Among 42,071 screened publications, 133 studies evaluating 121 DCT interventions were included in the final analysis. End-user effectiveness was most frequently used (n=67; 50% of studies), followed by epidemiological effectiveness (n=64; 48%), technical effectiveness (n=61; 46%), and population-level effectiveness (n=20; 15%). Among 122 effectiveness assessments, 73 (60%) considered DCT to be effective, mostly when evaluating epidemiological impact metrics. Public trust emerged as crucial for DCT to be effective, which requires high and enforceable data safety and privacy standards, clear and transparent communication, sufficiently high technical accuracy and reliability, and an acceptance-enhancing implementation approach.

Conclusions : DCT was found to be effective across a variety of metrics, though important gaps persist. While technical performance matters, DCT effectiveness primarily depends on a relatively small number of non-technical drivers centered around public trust. DCT should only be implemented as integrated part of a broader public health framework. Our findings hold important insights into the design, implementation, and evaluation of other digital technology for future pandemic responses.

Wildfire Density, Air Pollution, and Population Vulnerability in Korea and Japan

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Background : Climate change has intensified wildfire activity in East Asia. Both Korea and Japan have recently faced severe outbreaks, yet comparative epidemiological evidence is limited. Open-access environmental data provide opportunities to evaluate climate–health risks in near real time.

Methods : We analyzed 2020–2025 datasets: NASA FIRMS VIIRS 375 m active fire detections (nominal/high confidence) to define wildfire days (≥500 detections/day), NOAA ISD meteorological data (temperature, humidity, wind speed) within ±7 days of events, OpenAQ $PM_{2.5}$ and ozone levels for Seoul and Tokyo, and WorldPop 2020 gridded populations to estimate exposure. Indicators included wildfire density (per 1,000 km^2 forest), FRP intensity, and a composite risk index = (z-temperature + z-wind + z-$PM_{2.5}$) × (exposed population/10,000).

Results : Korea showed higher wildfire density relative to forest area, while Japan's events were longer in duration. Both countries experienced hot, dry, windy conditions during wildfire days. $PM_{2.5}$ rose 2–4 times above baseline, with larger peaks in Tokyo than Seoul. Within 30 km of fire clusters, Korea had more exposed population, whereas Japan had a greater share of older adults. The composite index suggested short-term cardiovascular and respiratory risks in both countries, driven by meteorological extremes in Korea and demographic vulnerability in Japan.

Conclusion : This study integrated FIRMS, ISD, OpenAQ, and WorldPop data to compare wildfire risk in Korea and Japan. Findings reveal distinct national profiles shaped by climate and population vulnerability. The approach demonstrates the feasibility of rapid disaster epidemiology using open environmental data, and underscores the need for climate-adaptive firefighter protection and tailored public health preparedness.

Keywords : wildfire, disaster epidemiology, Korea, Japan, climate change, $PM_{2.5}$

Exploring the determinants of ambulance response time in Japan during non and extreme events

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Ambulance response times (ART) are crucial in influencing both acute and chronic patient outcomes. In Japan, ambulance call volumes and response times have continued to increase, potentially leading to financial strain and delayed care for severe cases. These challenges are particularly pronounced during extreme weather events. Understanding the determinants may help inform more effective resource allocation.

This study aims to investigate the association between ambulance response time and its determinants at both individual and community levels under normal and extreme weather events. We analyzed 10,000 resampled ambulance records drawn from 25.6 million cases in Japan (2015–2020), integrating socioeconomic and meteorological data at the city level. Key determinants of ambulance response time (ART) were initially identified using the Boruta algorithm, followed by clustering to distinguish individual and community level factors. Associations between ART and these determinants were then assessed using linear regression models with a gamma distribution, focusing on both normal and extreme heat events.We identified 7 individual-level and 2 community-level clusters potentially influencing ambulance response time. The largest increase was observed in the cluster involving traffic-related calls with mild conditions [1.8 min, 95% CI: 1.4–2.3] compared to the reference cluster on normal days. Patterns across individual clusters persisted during extreme heat events, with slightly larger effects. At the community level, response time was higher in rural areas with dense elderly populations [0.5 min, 95% CI: 0.3–0.7] compared to urban areas, with no significant differences during extreme heat.Ambulance response times were most influenced by traffic-related calls with mild conditions and/or calls from rural areas with dense elderly populations. The effects were pronounced during extreme weather events.

Gestational Age and Intention to Receive RSV Vaccination: Web-Based Survey Analysis

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Background : Maternal vaccination against respiratory syncytial virus (RSV) prevents severe neonatal infections, but factors influencing willingness remain unclear. Gestational age variation matters. This study examined the association between gestational age and intention to receive RSV vaccination.

Methods : We analyzed data from a 2025 online survey of pregnant women and partners. The outcome was willingness to receive the RSV vaccine. Gestational age was grouped as 6–13, 14–23, and 24–36 weeks. Explanatory variables included age, education, income, employment, influenza and COVID-19 vaccination history, and awareness of RSV infection. Adjusted prevalence ratios (aPR) and 95% confidence intervals (CI) were estimated using modified Poisson regression with robust variance.

Results : Among 1,280 respondents, 608 (48%) expressed willingness. Compared with 6–13 weeks, willingness was lower at 14–23 weeks (aPR=0.82, 95%CI: 0.72–0.94) and 24–36 weeks (aPR=0.69, 95%CI: 0.60–0.79). Higher age (aPR=1.24), employment (aPR=1.33), prior influenza vaccination (aPR=1.25), and prior COVID-19 vaccination (aPR=1.30) were positively associated. Awareness of RSV infection was negatively associated (aPR=0.87). Education and income were not significant.

Discussion : Gestational age, vaccination history, and RSV awareness influenced maternal intention. Higher willingness in early pregnancy suggests that providing information at the first prenatal visit or maternal handbook issuance may encourage uptake. Lower willingness in late pregnancy highlights behavioral challenges. Prior influenza and COVID-19 vaccinations facilitated decision-making, underscoring the value of past experiences. The negative association with RSV awareness may reflect concerns about safety or necessity, stressing the importance of accurate, reassuring communication. Early intervention, use of prior vaccination experience, and addressing knowledge-based concerns are critical for promoting maternal RSV vaccination.

Post COVID-19 changes in adolescents' nutritional status, health behaviour and mental health in Thailand

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Aim : COVID-19 caused transformative socio-economic changes across the globe. Our goal is to comprehend the nutritional and behavioural changes in Thai adolescents in post COVID-19 era.

Method : We used Thailand 2021 global school-based student health survey (GSHS) data to measure the post COVID-19 estimates of nutritional status (obesity and thinness), health behaviour, and mental health and Thailand GSHS survey 2008, and 2015 were used for comparison. Participants aged 11 to 18 years. Total number of participants were 13,691. Obesity and thinness were defined using WHO's growth reference chart. We used descriptive statistics to produce prevalence using sampling weight and Wilcoxon Signed-Rank test to check if the differences are significant by years.

Result : In 2021, the prevalence of obesity and thinness in Thai adolescents was 9.9% (95% CI: 8.94-10.88), and 14.1% (95% CI: 13.00-15.20) respectively which were similar to those in 2008, and 2015. Further, 3.8% (95% CI: 2.99-4.52) of Thai adolescents reported frequent food unavailability in 2021, which also did not vary from the last two surveys. However, frequent intake of fast food sharply reduced to 39.8% (95% CI: 37.02-42.58) in 2021 from around 55% in 2015 and 2008. Proportion of the Thai adolescents who reported daily screen time more than 7 hours jumped to 23.8% (95% CI: 21.94-25.69) in 2021 from 14.6% in 2015 and 2008. Prevalence of binge drinking increased to 10.8% (95% CI: 8.62-12.95) in 2021 from 6-7% in 2015 and 2008. In 2021, 18.8% (95% CI: 17.43-20.18), 16% (95% CI: 15.12-16.85), and 17.3% (95% CI: 15.06-19.03) of the respondents suffered from loneliness, frequent sleep disturbance, and considered suicide respectively which were 8-9%, 6-9%, 12% respectively in two earlier surveys.

Conclusion : After COVID-19, the burden of obesity, thinness and food insecurities among Thai adolescents did not rose dramatically. However, daily screen time, sleep disturbance, alcohol use and mental health degraded sharply.