

COVID-19 PANDEMIC

RAEB'S Evidence Update

Highlights of health research synthesized by the Research, Analysis and Evaluation Branch

January 10, 2022

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RAEB's Rapid Responses for Ontario's Health Sector

Please contact [Evidence Synthesis Unit](#) for the full read of these rapid responses.

Impact of physical activity (PA) on Mental Health Outcomes during the COVID-19 Pandemic, including in At-Risk Populations

- **Increased Sedentary Behaviour is Associated with Depression/Anxiety:** A systematic review and meta-analysis (October 2021) showed that increased time spent in sedentary activities during the COVID-19 pandemic was negatively correlated with global mental health, depression, anxiety, and quality of life, irrespective of age. However, children (<18 years) were more negatively affected than adults or older adults (>65 years), highlighting this population as a key intervention target. Other research showed a relationship between decreased PA and poor mental health outcomes among children, adolescents, adults, college students, professional athletes, and seniors.
- **Moderate to Vigorous PA (MVPA) is Associated with Less Depression and Anxiety:** According to a systematic review (August 2021), early evidence suggests that people (age six-70; 68% female) who regularly performed PA with higher volume and greater frequency and maintained their PA routines, demonstrated fewer symptoms of depression and anxiety. Those reporting a higher total time spent in MVPA had 12-32% lower chances of presenting depressive symptoms and 15-34% of presenting anxiety.
- **At-Risk Populations:** Two studies demonstrated that household income/low socioeconomic status (i.e., less than \$60,300 in household income) and race/ethnicity were associated with lower levels of PA and increased psychological distress. In Canada, health equity

considerations to support PA include improving the built environment (e.g., access to parks), particularly in historically underserved and underinvested communities.

- **Implementation Implications:** Adopting positive coping strategies including PA to mitigate distress can have important implications for public health policy and practice during pandemic times, emphasizing the importance of accessible mental health resources for those experiencing psychological distress.

Research Evidence and Jurisdictional Experience

The research evidence profiled below was selected from highly esteemed academic journals and grey literature sources, based on date of publication and potential applicability or interest to the Ontario health sector.

Transmission

New England Journal of Medicine (NEJM): Effect of COVID-19 vaccination on transmission of B.1.1.7 (Alpha) and B.1.617.2 (Delta) variants of SARS-CoV-2

January 5, 2022. In this study, 37% of 146,000 polymerase-chain-reaction (PCR)-tested contacts of infected persons in England were positive for SARS-CoV-2. Transmission to vaccinated contacts (with two doses) was rarer than transmission to unvaccinated contacts, but the protection of vaccination waned over time and was more effective against the Alpha strain than against the Delta strain. [Article](#).

medRxiv: Early estimates of SARS-CoV-2 Omicron variant severity based on an Ontario study

January 2, 2022. This preprint study examined hospitalization and death associated with Omicron, as compared to cases infected with Delta, in Ontario. The risk of hospitalization or death was 65% lower among Omicron cases compared to Delta cases, while risk of intensive care unit admission or death was 83% lower. While severity is likely to be reduced, the absolute number of hospitalizations and impact on the health care system may nevertheless be significant due to the increased transmissibility of Omicron. [Article](#).

NEJM: Pfizer-BioNTech vaccine booster and mortality due to COVID-19

December 23, 2021. Among 843,208 participants in Israel who were 50 years of age or older and had received two doses of the Pfizer vaccine at least five months earlier, those who received a booster had 90% lower mortality than those who did not receive a booster. It was noted that due to a lack of data regarding serious adverse effects, future studies will be needed to assess the safety of the administration of the booster. [Article](#).

NEJM: Effects of BNT162b2 (Pfizer-BioNTech) COVID-19 vaccine booster in long-term care facilities in Israel

December 22, 2021. During a surge in cases of COVID-19 in Israel, a rapid deployment of Pfizer booster injections was initiated in long-term care facilities over a three-week period in July 2021. When infection rates were increasing in the general population in the same age group, rates in long-term care facilities (mean age 81.8 years) decreased by 71%, and hospitalization rates fell by 80%. [Article](#).

Health Equity and Vulnerable Populations

Journal of the American Medical Association (JAMA): Association between homeschooling and adolescent sleep duration and health during COVID-19 pandemic high school closures

January 5, 2022. In this survey study of 8,972 adolescents from Swiss high schools, during the COVID-19 lockdown, participants slept significantly longer and had better health-related quality of life and less caffeine and alcohol use than before the pandemic. Longer sleep duration was significantly associated with better health-related characteristics, although this was offset by an association of depressive symptoms with worse health-related characteristics and increased caffeine consumption. In this study, sleep gains were associated with better health-related characteristics among youths, but depressive symptoms were associated with a worsening of the same health-related characteristics. [Article](#).

JAMA: Assessment of regional variability in COVID-19 outcomes among patients with cancer in the United States (US)

January 4, 2022. This cohort study of 4,749 patients with cancer and COVID-19 found no significant differences in outcomes across the nine US census divisions. Overall, outcomes significantly improved between March and December 2020, and treatment at cancer centres in less densely populated counties was associated with better outcomes. These findings suggest that understanding the heterogeneity in COVID-19 outcomes between cancer centres could guide resource allocation and help the oncology community improve COVID-19 outcomes for this patient population. [Article](#).

JAMA: Screen use and mental health symptoms in Canadian children and youth during the COVID-19 pandemic

December 28, 2021. In this study of four cohorts, 2,026 children with 6,648 observations were included. Compared with children with lower levels of screen use, children with higher levels of screen use had significantly higher levels of mental health symptoms during the COVID-19 pandemic. These findings suggest that policy intervention, as well as evidence-informed social

supports, may be required to promote healthful screen use and mental health in children and youth during the pandemic and beyond. [Article](#).

Disease Management

Journal of Maternal-Fetal and Neonatal Medicine: Neonatal outcome among pregnant women with COVID-19

January 4, 2022. This systematic review and meta-analysis on neonatal outcomes among pregnant women with COVID-19 found that despite the positive test of neonates, the vertical transmission of COVID-19 from the infected mother to the fetus has not yet been conclusively proven; thus, further research is needed. [Article](#).

Brain Research Bulletin: Risk of ischemic stroke in patients with COVID-19 infection

December 31, 2021. This systematic review and meta-analysis evaluating the association between the risk of ischemic stroke and COVID-19 found that the risk for ischemic stroke was increased in COVID-19 patients, especially in patients from North America. Further studies with larger sample sizes that include different ethnic populations are required to confirm this analysis. [Article](#).

The Lancet: Final efficacy analysis, interim safety analysis, and immunogenicity of a single dose of recombinant novel coronavirus vaccine (adenovirus type 5 vector; Ad5-nCoV) in adults

December 23, 2021. This phase three trial at study in Argentina, Chile, Mexico, Pakistan, and Russia found one dose of Ad5-nCoV showed a 57.5% efficacy against symptomatic, PCR-confirmed, COVID-19 infection at 28 days or more post-vaccination. There was no significant difference in the incidence of adverse events between the Ad5-nCoV or placebo groups. [Article](#).

Case Testing and Screening

JAMA: Feasibility of SARS-CoV-2 surveillance testing among children and childcare workers at German day care centres: A non-randomized controlled trial

January 4, 2022. In this non-randomized controlled trial, surveillance testing for SARS-CoV-2 among 954 eligible individuals was well accepted by children, parents, and childcare workers if saliva sampling at home was used. Mathematical modeling based on study and literature data identified biweekly testing of at least 50% of children and childcare workers as minimal requirements to limit secondary infections. These findings suggest that SARS-CoV-2 surveillance testing is feasible and allows for continued day care attendance for children during the COVID-19 pandemic. [Article](#).

Public Health Measures

Journal of Infection: Short-term effectiveness of COVID-19 vaccines in immunocompromised patients

January 1, 2022. This systematic review and meta-analysis of studies found COVID-19 mRNA vaccines were effective against symptomatic COVID-19 among the immunocompromised patients (e.g., solid organ transplant recipients, patients with malignant diseases, patients with inflammatory rheumatic diseases) but had lower vaccine effectiveness compared to the controls. [Article](#).

Data Analytics, Modelling and Measurement

The Lancet: Effect of mandatory COVID-19 certificates on vaccine uptake

January 1, 2022. This study compared the effect of certification on vaccine uptake in six countries (Denmark, Israel, Italy, France, Germany, and Switzerland) that introduced certification (April-August 2021) with 19 control countries. Certification led to increased vaccinations 20 days before implementation in anticipation, with a lasting effect up to 40 days after. Countries with pre-intervention uptake that was below average had a more pronounced increase in daily vaccinations compared with those where uptake was already average or higher. There was no effect in countries that already had average uptake (Germany), or an unclear effect when certificates were introduced during a period of limited vaccine supply (Denmark). Increase in uptake was highest for people younger than 30 years after the introduction of certification. Access restrictions linked to certain settings (nightclubs and events with >1,000 people) were associated with increased uptake in those younger than 20 years. When certification was extended to broader settings, uptake remained high in the youngest group, but increases were also observed in those aged 30-49 years. [Article](#).

Health System Impacts

Journal of Infection: Impact of the SARS-CoV-2 pandemic on routine immunization services

December 21, 2021. Based on a data synthesis from 170 countries and territories, this study found a decline in the number of administered doses of diphtheria-pertussis-tetanus-containing vaccine (DTP3) and first dose of measles-containing vaccine (MCV1) in the first half of 2020. Recovery of vaccinations began by June 2020 and continued into late 2020. Substantial disruption to routine vaccination sessions related to interrupted vaccination demand and supply, including reduced availability of the health workforce. The marked magnitude and

global scale of immunization disruption evokes the dangers of vaccine-preventable disease outbreaks in the future. [Article](#).

Trusted Resources

- The Evidence Synthesis Network (ESN) is a collaborative COVID-19 response initiative by Ontario’s research and knowledge production community. The [ESN website](#) is a portal where research evidence requests can be made and includes previously completed ESN briefing notes.
- The [Ontario COVID-19 Science Advisory Table](#) is a group of scientific experts and health system leaders who evaluate and report on emerging evidence relevant to the COVID-19 pandemic, to inform Ontario’s response to the pandemic.
- COVID-19 Evidence Network to support decision-making (COVID-END) in Canada:
 - COVID-END is a time-limited network that brings together more than 50 of the world's leading evidence-synthesis, technology-assessment, and guideline development groups to support decision-making. In addition to Living Evidence Profiles, COVID-END hosts an inventory of best COVID-19 evidence syntheses from around the world. An up-to-date and comprehensive list of sources, organized by type of research evidence, is available on McMaster Health Forum’s COVID-END [website](#).
 - The COVID-19 Evidence Spotlights from COVID-END provide updated information on COVID-19 responses with three types of products from COVID-END in Canada: 1) Canadian spotlights; 2) global spotlights; and 3) horizon scans. To receive an email containing hyperlinks to these products twice a month, [subscribe here](#).
 - In the second half of December 2021, contributing Canadian evidence-synthesis teams produced nine newly completed evidence syntheses. From the COVID-END taxonomy, the syntheses focus on public health measures (n=8) and clinical management (n=1). Please visit [Canadian Spotlight 12](#) to view the evidence, or browse past [Canadian evidence spotlights](#). A complete list of the products is available [here](#).

About RAEB

Through research funding, brokering, translating, and sharing, we promote an enhanced evidence use capacity that supports all aspects of health policy, programming, and investment decision-making. Services include:

Literature reviews
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