Comparison of Symptoms Associated With SARS-CoV-2 Variants Among Children in Canada

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Introduction
Symptom profiles of SARS-CoV-2 variants have not been systematically characterized in children. We compared symptoms, ED investigations, treatments, and outcomes among SARS-CoV-2 variants.

Methods
This was a multicenter, prospective cohort study of children < 18 years tested for SARS-CoV-2 infection in 14 Canadian Pediatric EDs (August 2020 - February 2022), with an identified SARS-CoV-2 variant. Our primary outcome was presence/number of presenting symptoms. Secondary outcomes included core COVID-19 symptoms, investigations, treatments, and 14-day outcomes.

Results
Twenty-percent (1477/7326) of participants tested positive for SARS-CoV-2; 56% (819/1468) were male (median age 2.0 years (IQR 0.6-7.0)). Delta-infected children were most likely to report ≥7 symptoms (158/333; 47.4%); Alpha-infected children were most likely to have ≤3 symptoms (83/223; 37.2%). A multivariate model with the original-type as the referent strain demonstrated that Omicron and Delta were associated with fever [OR 1.92 (95%CI: 1.37-2.67) and 1.88 (95%CI: 1.30- 2.71)] and cough [OR 1.41 (95%CI: 1.05-1.89) and 1.50 (95%CI: 1.09-2.08)]. URTI symptoms were associated with Delta infection [OR 1.96, 95%CI: 1.38-2.78]; LRTI and systemic symptoms associated with Omicron infection [(OR 1.44, 95%CI: 1.07-1.96) and (OR 1.69, 95%CI: 1.20-2.39)]. Omicron-infected children were most likely to receive chest-x-ray (101/482; 21.0%; P=0.003), IV fluids (69/479; 14.4%; P=0.02) and corticosteroids (85/474; 17.9%; P=0.007), and to have an ED revisit (78/422; 18.5%; P=0.02). Among Delta-infected participants these occurred in 34/322 (10.6%; difference=10.4%; 95%CI: 5.3, 15.2), 30/324 (9.3%; difference=5.2%; 95%CI: 0.5, 9.5), 36/322 (11.2%; difference=6.8; 95%CI: 1.7, 11.5) and 26/276 (9.4%; difference=9.1%; 95%CI: 3.8, 14.0), respectively. The proportion of children admitted to hospital/ICU did not differ among variants (P=0.15 and P=0.49, respectively).

Conclusions
Omicron and Delta are most likely to cause fever and cough. Omicron-infected children are more likely to report LRTI and systemic symptoms, to undergo investigations, and to receive interventions. No differences were found in hospitalizations across variants.