

SYNOPSIS

12/30/2020

Review of “Factors associated with positive SARS-CoV-2 test results in outpatient health facilities and emergency departments among children and adolescents aged <18 years—Mississippi, September–November 2020”

Article citation: Hobbs CV, Martin LM, Kim SS, Kirmse BM, Haynie L, McGraw S, et al. Factors associated with positive SARS-CoV-2 test results in outpatient health facilities and emergency departments among children and adolescents aged <18 years—Mississippi, September–November 2020. *MMWR Morb Mortal Wkly Rep.* 2020;(69)50:1925-9. Available from: <https://doi.org/10.15585/mmwr.mm6950e3>

One-minute summary

- This is a case-control study that compares school, community, and close contact exposures of persons aged <18 years who tested positive for COVID-19 by reverse transcription–polymerase chain reaction (RT-PCR) (case patients), with those who tested negative (control participants).
- Among 397 subjects, four statistically significant factors were identified as associated with increased COVID-19 risk and one with decreased COVID-19 risk:
 - Attended social gatherings of children (e.g., birthday parties, playdates) (adjusted odds ratio [aOR] = 3.3, 95% CI = 1.3–8.4).
 - Close contact with a COVID-19 case (aOR = 3.2, 95% CI = 2.0–5.0); most of these contacts were with family members.
 - Attended other types of social gatherings (e.g., weddings, parties, funerals) (aOR = 2.4, 95% CI = 1.1–5.5).
 - Had visitors in their home (aOR = 1.9, 95% CI = 1.2–2.9).
 - Indoor school/daycare: participants ≥ two years and all staff members masked (n = 236) (aOR = 0.4, 95% CI = 0.2–0.8).
- Factors that were not statistically significant included:
 - Any in-person school or child care attendance (when not all participants and staff masked)
 - Household member works outside of the home
 - Household member works in health care with patient contact
 - Attending sporting events or concerts
 - Attending religious services
 - Travel with others
 - Dined at restaurants

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- 69% of children with COVID-19 reported close contact with a known case. Most of these exposures were to family members, reflecting the important role of household transmission in this age group.

Additional information

- Data were collected by trained interviewers. The exposures were reported by the parents or guardians of the participants. The characteristics of the participants, including age distribution, sex, race/ethnicity, among others are available in a Table. Logistic regression models were used to calculate the odds ratios, accounting for child sex, age group and race/ethnicity. The COVID-19 test result was the outcome variable.
- The participants received testing for COVID-19 via nasopharyngeal swab specimens by RT-PCR at outpatient testing health care centres (including drive-up testing locations) or emergency departments associated with the University of Mississippi Medical Center during September 1–November 5, 2020. A COVID-19 case was confirmed by a positive SARS-CoV-2 RT-PCR test result.
- After excluding inconclusive RT-PCR results, lists of participants with an electronic medical record of a COVID-19 test within the study period were randomly ordered by laboratory result. Controls were frequency matched at 2:1 to case-patients by age group (0–3, 4–8, 9–14 and 15–17 years), sex, and test date interval (September 1–24, September 22–October 18, and October 14–November 5, 2020), with a target sample size of 150 case-patients per stratum.
- In all, 896 potentially eligible children (290 who tested positive and 606 who tested negative) were identified and telephoned an average of 32 days after testing; 494 parents or guardians could not be contacted or refused, and five were excluded because the child had been hospitalized with COVID-19; 397 participants were included (154 case-patients and 243 control participants).
- Close contact was defined as contact within 6 feet for ≥ 15 minutes with a person with known COVID-19.
- A higher proportion of masking and social distancing was reported for children who attended gatherings, compared to having visitors in the home.
- The authors describe four limitations:
 - The sample included 397 children and adolescents tested during September–November 2020 at health care facilities associated with one large academic medical center in Mississippi and might not be representative of children and adolescents in other geographic areas of the United States. Further, parents of eligible children who could not be contacted or refused to participate could be systematically different from those who were interviewed for this investigation.
 - Unmeasured confounding is possible, such that reported behaviours might represent factors, including concurrently participating in activities in which possible exposures could have taken place that were not included in the analysis or measured in the study. Most respondents were aware of their child’s SARS-CoV-2 test results and interviews were conducted several weeks after testing, factors which could have influenced parent responses.
 - Parent report of frequency of mask or cloth face covering use at schools and child care programs was not verified.
 - Case or control status might be subject to misclassification because of imperfect sensitivity or specificity of PCR-based testing.

PHO reviewer's comments

- The generalizability of the finding should be viewed with caution as not all practices (e.g., masking in schools) will apply to all jurisdictions.
- Compared with the setting for this study, other countries likely had different public health measures implemented over different time periods, as well as different levels of adherence by the public.
- This study included those who sought testing, and may not be representative of all individuals who do not seek testing.
- The small sample size may have limited the ability to detect significance for certain factors.

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Factors associated with positive SARS-CoV-2 test results in outpatient health facilities and emergency departments among children and adolescents aged <18 years—Mississippi, September–November 2020”. Toronto, ON: Queen’s Printer for Ontario; 2020.

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