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Review: What is the evidence for transmission of COVID-19 by children [or in schools]?



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Title: What is the evidence for transmission of COVID-19 by children [or in schools]?

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Names and contact details of reviewers: Xue Li (xue.li@ed.ac.uk); Wei Xu (s1619113@ed.ac.uk); Prof Evropi Theodoratou.

Question: What is the evidence for transmission of COVID-19 by children [or in schools]?

Answer:

- Despite librarian-supported duplicate searches by experienced reviewers, no high quality studies directly addressing the study question were identified. This review will continue weekly literature updates to identify any new relevant evidence as it is reported.
- It is widely reported that children can get infected after exposure to confirmed cases, through household or travel contacts. Most paediatric patients have been family-clustered cases and a few have been infected during hospitalisation. Perinatal infection can also occur when the baby is born to a pregnant woman with confirmed infection via vaginal delivery, while vertical transmission from mother to infant or via breastfeeding have not yet been established. There are no reported outbreaks of COVID-19 in schools or nurseries.
- It is estimated that the number of infected children with latent asymptomatic or with mild symptoms of respiratory or gastrointestinal illness is higher than in adults. Available evidence also suggests that children may have more upper respiratory tract (including nasopharyngeal carriage) than lower respiratory tract involvement. Their prognosis is generally better than that in adults.
- There has been no confirmed evidence or reports of paediatric cases as the main source of infection. However, there is risk of transmission by infected children (with virus in nasal secretions and stools) and some evidence of faecal-oral transmission in asymptomatic paediatric cases. This limited evidence may have substantial implications for community spread in day-care centres, schools, and homes.

Background and Aims

There is uncertainty about the risk of COVID-19 transmission by children. Clarity on this issue could help in guiding policies on school closure/opening.

Methods

We searched PubMed on 31/03/2020 to identify relevant studies reporting on the COVID-19 transmission routes among infected (both symptomatic and asymptomatic) children and adolescences. A total of 134 publications were retrieved and 44 studies met the inclusion and exclusion criteria.

Results

It is widely reported that children can get infected after exposure to confirmed adult cases through household or travel contacts. Most paediatric patients were family-clustered cases and a few were infected during hospitalisation. No outbreaks in schools or nurseries were identified. Respiratory droplets and close contact are reported as the main transmission routes, with an additional potential role of faecal-oral transmission for paediatric cases. Perinatal infection can also occur when the baby is born to a pregnant woman with confirmed infection via vaginal delivery; vertical transmission or transmission through breastfeeding have however not yet been established. The number of infected children with latent asymptomatic disease or with only mild respiratory or gastrointestinal symptoms is estimated to be higher than in adults and their prognosis is generally better.

Conclusions:

There is no confirmed evidence or reports of paediatric cases as a source of infection. However, there is risk of transmission by infected children. Therefore, virus in nasal secretions and stools may have substantial implications for community spread in day-care centres, schools, and homes. There is also some evidence of faecal-oral transmission in asymptomatic paediatric cases.

In summary, there appears to be risk of transmission by infected children, especially when considering the evidence of faecal-oral transmission in asymptomatic paediatric cases. The presence of SARS-CoV-2 virus in nasal secretions and stools may have substantial implications for community spread in day-care centres, schools, and homes.

Keywords: COVID-19; coronavirus; SARS-CoV-2; children; newborns; neonatal; transmission; family cluster

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