The international journal of science / 10 February 2022

nature

Long COVID and kids: more research is urgently needed

Like adults, children can experience long COVID, but few studies include young people. That has to change.

Long COVID is a term devised by patients to describe the lingering symptoms they experience well after an initial bout of COVID-19. The symptoms vary widely, but some of the most common are fatigue, shortness of breath, cognitive dysfunction (also called brain fog) and post-exertional malaise, in which even minor physical activity leads to lasting exhaustion. Between one-fifth and one-third of those with long COVID remain ill at least 12 weeks after a diagnosis of COVID-19, and a significant number continue to experience symptoms many months later. Many want the condition to be considered a disability.

Two years into the pandemic, there have been some 400 million confirmed cases of COVID-19 worldwide. Many more have probably gone undocumented. On the basis of the prevalence reported so far, there could be somewhere in the region of 100 million people now living with long COVID.

What little is known about long COVID in children and teenagers suggests that it can be just as disabling as it is in adults. However, there are many fewer studies in teens than in adults — and even fewer in children under the age of 11. This latter group is seeing a surge of COVID-19 infections: in many countries, children are not being vaccinated. More COVID-19 in kids will lead both to more long-COVID cases and to the spread of disease among vulnerable populations. It's time for younger people to be included in more studies of the condition, including trials of potential treatments. The UK support group Long Covid Kids says that reports of long COVID in children and teenagers are disbelieved by medical professionals. That, too, needs to change.

In adults, multiple studies have assessed the prevalence of long COVID, so there are now relatively good data showing that long COVID is alarmingly common. For example, a meta-analysis published last December (F. Ceban *Brain Behav. Immun.* **101**, 93–135; 2021) pulled together 81 long-COVID studies published up to last June and examined how people were doing 12 or more weeks after being diagnosed with COVID-19 — 32% reported that they were still experiencing fatigue and 22% reported cognitive impairment. The bulk of these studies were done in high-income countries, where populations are older, and include few data on children and teenagers. But they do provide a sense of the scale of the problem.

Many of the studies of long COVID globally that do include children were done in hospitalized people. But some of the best evidence on long COVID in younger people comes from Children & Young People with Long Covid (CLoCk), a study by researchers at the University College London Great Ormond Street Institute of Child Health. The study, published this week (T. Stephenson *et al. Lancet Child Adolesc. Health* https://doi.org/hf79; 2022), recruited 6,804 11- to 17-year-olds in the United Kingdom in early 2021. About one-half had positive PCR tests for COVID-19; the other half were negative and served as controls. Three months after being tested, both groups completed a questionnaire asking what symptoms they were experiencing. Both reported some symptoms, but those who had tested positive were more likely to have long-COVID symptoms than were those with a negative test result — and were almost twice as likely to report three or more symptoms.

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The CLoCk study suggests that, in the United Kingdom alone, tens of thousands of children and young people might have long COVID. This is in line with an estimate from the UK Office for National Statistics (see go.nature.com/3j7wx7t) that 44,000 2- to 11-year-olds in the country have long COVID, as do 73,000 12- to 16-year-olds. These figures are subject to uncertainties, but do still demonstrate that younger people are developing long COVID in significant numbers. It is irresponsible of governments to allow the virus to spread in this age group, especially in countries where the majority of children are unvaccinated. Past disease outbreaks often led to lasting symptoms, such as post-polio syndrome, and COVID-19 is clearly no different.

The few studies done so far also suggest that children's long-COVID symptoms could be similar to those seen in adults. These findings need to be confirmed by more detailed surveys.

Relatively few such studies are in the works. Last year, the US National Institutes of Health announced that it would set aside US$1 billion for research into long COVID. One of these is a study to track the recovery of a 'metacohort' of 40,000 adults and children infected with SARS-CoV-2. In the United Kingdom, the National Institute for Health Research, the main funding agency for health science, has funded three studies of long COVID that include younger people. One is the CLoCk study. A second is exploring how families are affected by the condition. The third is a study of the immune systems of people with long COVID, intended to elucidate the underlying mechanisms of the condition and suggest potential treatments. The study is mostly focused on adults, but includes a small number of children.

The disparity is also noticeable in trials of potential treatments for long COVID. Of several that are under way, none involves teenagers or children. This reflects a general pattern in medical science: adults are studied first and children come later, partly for safety reasons, so that therapies can be tested on adults before they are tested on children.

It is, of course, harder to obtain data for children below the age of 11, and there are legitimate challenges in recruiting children for trials, including obtaining informed consent from parents or guardians. But it's important that young people are not forgotten. Institutions and funding agencies need to think harder and more creatively, otherwise children with conditions such as long COVID will continue to be left behind.