

# Children: their role in the face of the pandemic in Mexico

## From our point of view

As pediatricians, we are sure that we have had to see the anguish that overwhelms those parents who have tested positive for COVID-19. A few days ago, in the morning news of our country it has become customary that on a daily basis the epidemiological alert continues with variations in the traffic light of social activity (Stay home, go out only if necessary, social distancing, lockdown, commercial activities closed, recreational trips canceled, etc.) and that places such as Ensenada have reported more than one hundred and eighty new cases of COVID-19 in a single day and in a single laboratory, a fact that raises local alarms, and also worries the fact that in that locality with a population of only 443,807 inhabitants registered a high associated mortality as in other communities, with a higher population register, such as those of the State of Mexico; Example: Ecatepec with 1 million 656 thousand 107 inhabitants, which places it as the demarcation with the highest population concentration not only at the state level, but also at the national level; Toluca, with 819 thousand 561 inhabitants; or Netzahualcóyotl with 1,109,363 inhabitants. Certainly the same in the State of Mexico and the same CDMX are at red traffic lights (like Ensenada) due to their high mortality (23,579 vs 21,698 cases respectively as of January 27, 2021) and high levels of contagiousness associated with the disease, being higher mortality in adults than in children, drawing attention to the fact that, according to INEGI data, deaths in women are exceeding that of men and, according to statistics, practically children are less vulnerable, however, the fact of what would be the future of our children if one or both parents die.

The reality is that the contagion is and will continue to be high. Unfortunately, the spread of the virus due to the idiosyncrasy of the Mexican (100% supporter) will be what will perpetuate this still called a pandemic by many "experts" and considered by others as an already endemic poorly controlled event, pending the drug that has full activity against SARS-CoV-2, or the vaccine that is really 100% efficient and effective.

It is true that we all know several relatives or friends and nothing strange, to find out that they have had losses and all because the contingency measures have not been taken seriously. A tangible problem is that positive parents (mom and dad), in addition to their symptomatic picture, are added the anguish of infecting their children and are absurdly looking for where to send them so as not to infect them, being the grandparents house, the place ideal in which they first think ¡Nothing more absurd! First, remember that this virus is highly contagious, so that children are most likely infected and although its ability to infect adults is unknown (unlike influenza where children transmit more to adults) it is possible that they can transmit the infection, despite the children, most of the time they have an asymptomatic or mild condition. Second, sending them to their grandparents is to run the risk of sending the contagion to people who most likely have, in addition to risk factors (co-morbidities), greater immunological vulnerability. This convenience of grandparent care can result in a big and serious problem.

Coronaviruses are NOT a new germ in pediatric pathology, they have circulated for several years (the first endemic coronavirus

Volume 8 Issue 1 - 2021

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**Received:** January 29, 2021 | **Published:** February 05, 2021

was discovered in 2003 [HCoV-NL63]), being the cause of flu and digestive symptoms and it is not considered a cause frequent disease and much less mortality, includes the adults and young people. Now the question is ... *How children have faced the pandemic, and if they can be considered heroes too?*

Perhaps because when the children get sick, the picture is milder, shorter or asymptomatic. The reason is because children, having an immature immune system, have very few angiotensin converting enzyme (ACE) receptors, which is why SARSCoV-2 does not generate as intense an immune response as in adults. Since the infant, preschool and school stages, many of them have already become ill from other endemic coronaviruses, which has been considered to promote cross-immunity to SARS-CoV-2.

Considered children under 10 years of age have higher viral loads than children between 11 and 19 years of age, they stimulate a greater response of the immune system by increasing INF (Interferon) favoring better protection. In other words, when they become in contact with a new virus, develops an innate response and starts its entire immune system and controls the invader quickly, something that does not happen with the adult, because the adult, having a mature system immune and when faced with a new virus, it searches through its entire repertoire and tries to give a specific response, which makes it slow and ineffective and worse, triggers a systemic inflammatory response quickly, and that is the reason for severe cases. And other condition in the children is that they are vaccinated with BCG, causing a Non-Specific Effect. We know as beyond target effect white. Biologically speaking, the adaptive system in children makes sense because adults rarely encounter a virus for the first time.

This SARS-CoV-2 is new to everyone, and the innate system dissipates as adults age, which is why they are more vulnerable and in the period in which the specialized adaptive system of an adult body is activated, the virus already had time to cause damage.

In children, a branch of the immune system that has evolved to protect them from unknown pathogens rapidly destroys the coronavirus before it causes harm to the body, according to research,

published September 30, 2020 in Science Translational Medicine and led by Betsy Herold, an expert in pediatric infectious diseases from the Albert Einstein School of Medicine.

Another point of view is what we known as the “payment of the biological toll” that occurs when the passage of a virus from host to host makes it more or less virulent, the latter being the best known that happens and is what is applied in attenuation techniques in the development of certain vaccines. And we want to think that this is what the immune system favors in children and without realizing it they will develop adaptive defenses so strong that they will not experience any of the problems that adults are currently having. And perhaps they play an important role in herd immunity, remember the chains of transmission can be limited by “biological damage” accumulated in the virus, and this is happen with the “payment of the biological toll”.

On the other hand, children in our country have faced serious problems from the pandemic, such as: Psychological impact of confinement; their vaccination coverage reduced (parents do not take them to vaccinate), and therefore we have states with incomplete vaccination schedules (there are no vaccines in health units); they do not go to schools and their learning at home is not guaranteed, in addition there is no food security (serious problems in those places who receive school meals); child abuse at home; children with chronic diseases are poorly or unattended; they became a political issue. *That is why we have also considered them the heroes of the pandemic.*

We consider that if the biological toll suffered by the virus in children would favor that high doses of inoculums could collapse;

Therefore, the initial strategy of its confinement (keeping all the children in their homes), although it helped to drastically reduce infections, did not allow to assess its role in herd immunity, and to evaluate the attenuation of the virus.

## Final comment

We have learned three things in children from this pandemic:

- A. THE GOOD: The number of pediatric patients reported in other series around the world and in Mexico, both in proportion and severity, are low.
- B. THE BAD: That independently no one wants their child to be infected and could be a serious case.
- C. THE UNCERTAIN: We do not know how many children are carriers and how many already have immunity.

Best of all, history has taught us that all pandemic viruses become endemic when they tend to become seasonal and surely as we mentioned this virus is already an endemic virus that is here to stay.

## Acknowledgments

None.

## Conflicts of interest

All authors declare that there is no conflicts of interest.