

“The pandemic has taught us to work together to solve problems”

Dr Gagandeep Kang

DR GAGANDEEP KANG is an Indian virologist and professor at Christian Medical College, Vellore, India. She was earlier the executive director of the Translational Health Science and Technology Institute (THSTI). Dr Kang is a leading researcher, well known for her research on rotaviral vaccines and viral infections in children. She has received the Infosys Prize in Life Sciences in 2016 for her valuable contributions to the natural history of rotavirus and other infectious diseases. In 2019, she was the first Indian woman to be elected fellow of the Royal Society. She is also the co-author of the book *Till we Win: India's Fight Against the COVID-19 Pandemic*.

Dr Gagandeep Kang talks to **HRISHI LOGANI** – a student of class 12, Delhi Public School, Vasant Kunj – about her journey from a microbiologist in CMC, Vellore to a fellow of the Royal Society, lessons learnt from the COVID-19 pandemic and message for emerging scientists.

Hrishi Logani: *Dr Kang, it is a privilege talking to you and thank you so much for agreeing to give this interview. Let me begin by asking you about your journey from being a microbiologist in CMC, Vellore, India to a Fellow of the Royal Society.*

Dr Gagandeep Kang: Well, I am still a microbiologist at CMC, Vellore and a Fellow of the Royal Society, so I hope the journey still has a way to go. I think I have been extremely fortunate in having the opportunity to pursue the kinds of questions that were important for India, fascinated me, and could be answered through really good science. I have been very lucky in many ways.

The Christian Medical College, Vellore, is an incredible place to study and grounds you in the reality of India, or at least northern Tamil Nadu. In the first year of medical college, we were sent to a village for three weeks, to collect data on people, their lives and their health problems. When you do that you understand how stratified our society is, how it includes some and excludes others particularly in health and education, and the devastation that unexpected health emergencies can bring to families that have few financial resources. Everything that I have done after that builds from that foundation of considering not just the medical issues of an individual, but the families and communities that are affected by illness.



The value of health cannot be overstated, and that is why I chose to work on children, their development potential, and the infections that impact their growth and cognition, and vaccines, which play a huge part in the promotion of health. I had the privilege of working with outstanding young people and truly wonderful collaborators abroad who helped me build a strong team capable of independently designing and conducting studies that address problems that are important for us. I have been doubly privileged to have the Royal Society recognise the contributions that we have made and the quality of the research that allowed us to bring the best epidemiologic and laboratory science to neglected but important problems.

Hrishi Logani: *This pandemic has been a scary experience throughout. How lethal or devastating has it been for young children globally?*

Dr Gagandeep Kang: For children in the pandemic, we need to consider the direct effects and the indirect effects. Children acquire infections at the same rates as adults but have much less disease. There is a special condition called the Multi-system Inflammatory Syndrome in Children which is serious, but rare. A few children also develop Long Covid Syndrome but seem to recover in about six months. Children are also impacted when they lose family to COVID-19. The devastation to families in India has been hard to bear.

As a society, the greatest damage to children is through indirect effects. All over the world, many children in many countries have been out of school for over a year. While some children adapt well to online classes and have the resources to attend, it is challenging for those who are not digitally enabled. It has been estimated that the pandemic has impacted education. In India, the study done by the Azim Premji University found that among young children, 92% had lost one specific language ability and 82% had lost one specific mathematical ability during the pandemic. In addition to education, the uncertainty of the future has impacted children's mental health in many ways. All of these are going to take a long time to recover.

Hrishi Logani: *You've led the testing of the Rotavirus vaccines in India; how important is it to get children vaccinated against COVID-19?*

Dr Gagandeep Kang: At the moment, vaccines have just become available for children older than 12 years of age in North America and Europe. In India, these vaccines are not yet available, but they are being tested, and we hope that they will become available during the latter part of the year. Children will need to be vaccinated, but unusually this is an illness that affects children much less than adults, so the urgency is to immunise adults first. For most other infectious diseases, we immunise children because they are more often or severely affected than adults.

Hrishi Logani: *There are debates about whether schools should be opened or not. What is your view? Can online education substitute for school education?*

Dr Gagandeep Kang: I think schools should only be opened when there is very little infection in the community. At the moment, adults are getting immunised and teachers should be prioritised to protect them and to protect children. When vaccines become available for children, children should be immunised but this may take a while. Therefore, if schools can ensure small class sizes, distancing, mask-wearing, hygiene and good ventilation, and if there is very little infection around, then it may be feasible to slowly open schools, being ready to move to online teaching again if anyone is infected.

I think there is no real substitute for face-to-face education because we learn a lot more at school than just from the content of our lessons. But protecting children and families has been essential for the past year. Now that we have vaccines, I hope it will be possible to go back to school again even if not in the same way as before.

Hrishi Logani: *Are the emerging mutations of COVID-19 impacting young children as well? What do you think we need to do to manage the consequences of children being infected in early life?*

Dr Gagandeep Kang: The emerging mutations of SARS-CoV-2 are not impacting children any differently from the older variants of the virus. The new variants are

very much more infectious than the viruses that we saw in the first wave. Overall, the number is much larger, so the number of children that are infected is also larger than we saw before. The proportions have not changed but the total numbers have.

For some viral infections, children should acquire the infections in early life because the infection is handled easily and children have few symptoms. This is certainly the case with the hepatitis A virus. For SARS-CoV-2, if we did not have vaccines and infection was inevitable, it would be better to get the infection early rather than later in life. Now that we have vaccines, even though the risk of severe disease is very small, I hope all children will be protected soon.

Hrishi Logani: *Your book Till we Win states that this pandemic can be utilized as an opportunity for Healthy India; what do you intend to convey by this statement?*

Dr Gagandeep Kang: The one thing we have realised during this pandemic is that Indian health systems are weak and we need to make sure that we strengthen them as much as possible. The best way to manage any disease is to stop it from happening or stop it from getting worse and for that we need good preventive strategies and strong primary health systems that keep people out of hospitals. All too often what happens in India is that people wait until the disease becomes severe and only then come to the hospital. Good public health is essential, and I hope the pandemic gets our leaders to invest in the health of India's citizens.

Hrishi Logani: *Digital tools have been effective in combating COVID-19 in countries like United States, South Korea, Singapore, Canada and many other countries. What is the message for India?*

Dr Gagandeep Kang: We need technology to handle a pandemic. Data is critical for mapping disease, healthcare facilities and behaviour. For the delivery of vaccines on the scale that is needed, managing systems of registration, validation, delivery and monitoring, digital tools ease the task. For India, there is much to applaud but much still to do. The digital divide is very real and we need to make sure that it is not a means of exclusion.

Hrishi Logani: *You're an inspirational figure for the scientific community. What is your message for emerging scientists? What do you think the children can learn from this pandemic experience?*

Dr Gagandeep Kang: Keep learning, take on big questions, and have fun. Science changes the world, sometimes slowly, sometimes fast, but always. The pandemic has taught us how much we can do if we work together. This is a connected world, and solving problems together allows us to grow faster.

Hrishi Logani can be reached at loganihrishi@gmail.com