

Positioning primary care as base of health care pyramid

'The practice of medicine is an art, not a trade; a calling, not a business; a calling in which your heart will be exercised equally with your head'. - Sir William Osler (1849-1919)

Dear Editor,

Raina and Kumar identify role of public health and primary care as disparate entities in current health system in their editorial in Oct 2021 issue of the Journal. They analyse in the *Context* of ongoing coronavirus disease 2019 (Covid-19) pandemic that we created a system that did not cope well. They propose its reason therein too that despite being warned of an impending pandemic for long and despite claiming to have enough analytical capabilities and artificial intelligence tools to make better predictions, we were unable to change the outcome.^[1]

But fact of the matter is that artificial intelligence works on the basis of what information and algorithm we provide to a computer. Revving up on the power of numerous silicon chips and gigabytes of data, modern day microprocessors can make trillions of calculations on the blink of an eye—what we call generating instant results. The technology is used for detecting diabetic retinopathy,^[2] atrial fibrillation,^[3] reading medical scans, slides, skin lesions, picking up of small polyps during colonoscopy but basic principle of its working is same. It searches a huge database which it is already fed up and quickly it looks for a pattern which matches up closely to provide a report. Although making prognosis is possible for an individual patient on the basis of risk factors and admission course; if we employ the system to predict the course of a pandemic, we are likely to face several unsurmountable challenges and failures.

First of all, how does the virus behave in real time, how much does it mutate, what alterations in its genetic structure does it acquire when it multiplies; may be difficult to predict. When do the new mutants emerge which change the course of—and ravage—a country; is fraught with several limitations. Second, the public health measures which we deploy to control spread of the wildfire^[4] and the extent to which population follows it is not something which a machine can predict as humane factors are in play there.

Third, when does a vaccine appear in the market, what is its acceptability and how much it is effective and safe; decide

course of a pandemic and a machine should not be blamed if the information is not provided to a system. When tens of millions of Americans chose to remain unvaccinated, presumably pandemic- of – the – unvaccinated is making a hit across the globe.^[5] No machine has been manufactured till now which will conjure up data to predict such population behaviour.

Then under a heading of 'Paradox', the authors write in eighth paragraph that the improvement in these indicators, that is, total fertility rate, infant mortality rate, maternal mortality rate, etc., has been remarkable since independence but imaging this improvement in the absence of improvement (increase) of food grains or (rising) literacy levels will not be appropriate. The authors implicitly state that when food grains production increased due to Green Revolution and literacy levels rose due to widespread availability of schooling, there is likely to be an improvement of such demographic parameters. But I want to underscore here that is neither India-specific phenomenon nor a unique observation since our independence.

Due to breakthrough discoveries by astute observers—scientists, untiring inventors, fearless epidemiologists and broad collaboration between experts of disparate fields—20th and 21st centuries overcame unprecedented challenges, faced odds to survival successfully and triumphed over nuclear and biological threats to our species. Edward Jenner (1748–1823) is well known for his seminal work of variolization which ultimately helped in eradicating small pox from the face of the earth.^[6] In 1854 AC, John Snow in London discovered that cholera was a water-borne illness and removed handle of a Broad Street Pump to stop the epidemic.^[7] When knowledge about such fundamental discoveries and inventions reached other continents, spread of diseases got curbs, epidemics receded and economies started to grow robustly.

Result was that life expectancy started to rise even before Scottish physician and microbiologist, Alexander Fleming, discovered Penicillin in 1928 and shared 1945 Nobel Prize with Ernst B Chain and Sir Howard Florey with whom he began its commercial production.^[8] Although commercial production of the antibiotic started well into second half of 20th century, life expectancy around the globe started to rise several decades earlier. Researchers of Oxford University, UK, run a website named *Our World in Data*. It shows secular trends for the past few centuries. Under a heading '*Rising life expectancy around the World*', it shows a graph of life expectancy between 1770 and 2019.^[9] Therein, one can observe that the parameter started to rise everywhere thanks to breath-taking experiments of astute biologists. While Oceania, Europe, Americas and Asia started the race at the turn of 19th to 20th century to march up, Africa was a late starter and began to climb up after first quarter of 20th century.

The inference we draw is that although modern day medical inventions provide us comfort, relieve pain and suffering and many a time are life-saving, our survival owes to those original researchers/innovators and clever observers who started to unravel mysteries of the universe one by one long before. While who's who nowadays may believe that hospital-based medicine is the only form of medicine in action, discovery of public health measures began to alter course of the history of our civilization long before.

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Harish Gupta

Medicine, KG's Medical University, Lucknow, UP, India

Address for correspondence: Dr. Harish Gupta,
Medicine, KG's Medical University, Lucknow, UP - 226 003, India.
E-mail: harishgupta@kgmcindia.edu

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