

COVID-19 Vaccine: From Dream to Reality

Dear Editor,

It has been a year since the World Health Organization (WHO) reported the emergence of a new virus in December 2019 following the outbreak of the severe respiratory disease in China. Subsequently, the virus causing the pandemic was called COVID-19.^[1,2] According to a report by the WHO on December 8, 2021, approximately, 2 years after the onset of the COVID-19 pandemic, the virus has infected more than 266 million people and killed more than 5 million people worldwide.^[3]

Due to the high number of cases, relatively high mortality rate, and other impacts of the virus and the associated crises caused by this disease, over the past year, all researchers' efforts globally have been put into discovering a suitable vaccine for COVID-19. The results of such researchwork finally led to the discovery of the COVID-19 vaccine by the American company of Pfizer and the German firm BioNTech; this vaccine received the necessary licenses and approval from the US Food and Drug Administration as the first vaccine against this disease. Almost at the same time, another American firm, Moderna, announced the discovery of a similar vaccine, and received the necessary approval as the second COVID-19 vaccine.^[4]

The Pfizer-Biotech vaccine (referred to as BNT162b2) and the modern mRNA-based vaccine both use fat nanoparticles to deliver part of the genetic code in the form of mRNA from the Coronavirus into human cells. In addition, both of these vaccines, that is, Pfizer-BioNTech and Moderna, require two injections at intervals of 21 days and 28 days, respectively. The only information that has been reported so far about the effectiveness of these vaccines is that the Pfizer-BioNTech and Moderna vaccines have 95% and 94.5% effectiveness rates, respectively.^[4]

It seems practically meaningless to only report a single numerical index (effectiveness) for such vaccines, since no supplementary information has been provided about the performance of the vaccines. Moreover, what has been reported about the demographic combination in the clinical trial phases itself raises further doubts.

We can consider a vaccine effective when we are able to provide other important measures and ask the right relevant questions: Absolute Risk Reduction, that is, how many people will not get the disease by vaccinating and reducing

the risk factor? Number Needed to Treat, that is, how many people need to be treated to reduce one death? Number Needed for Harm, that is, how many people should be treated to report a vaccine-related complication?

Therefore, despite that the discovery of the COVID-19 vaccines is a significant achievement for the global health, hasty decisions to distribute and offer the vaccines, based on a single numerical indicator (effectiveness), cannot assure their success. Therefore, it is necessary and logical to offer the vaccines after gaining sufficient information about their performances and obtaining clear answers to the questions raised earlier. Nonetheless, other scientifically approved health protocols, until the final confirmation of the effectiveness of vaccines, should not be neglected within the communities.

Authors' contributions

MM contributed to the design, prepared the manuscript.

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Conflicts of interest

There are no conflicts of interest.

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