



What Are the Reasons for Refusing the Booster Doses of COVID-19 Vaccines? Recommendations and Solutions

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Dear Editor,

After almost two years, the world is struggling with a deadly virus that is still infecting people daily across the world; moreover, successive mutations in the virus create new variants with higher spreading ability and new waves of disease (1-3). Coronavirus disease 2019 (COVID-19) claimed the lives of many defenseless people and medical staff on the front lines in the first months and years. In the fight against this deadly virus, the human being has shown that he has not retreated and has fought against it with all his might, and the production of various vaccines has increased the human defense against it (4). Although vaccines are highly effective in prohibiting death and severe disease, evidence suggests that the immunity from COVID-19 vaccines reduces over time (5). Progressive infections have been shown to be significantly lower in people who were vaccinated later with the Pfizer-BioNTech vaccine than in those who were vaccinated earlier. Amongst fully vaccinated nursing home residents, it was determined that the vaccine efficacy reduced from 74.7% to only 53.1% in a few months, and among New Yorkers, it decreased from 91.7% to 79.8%. However, vaccines reduce hospitalizations, and if the effectiveness of vaccines declines over time, the likelihood of hospitalizations following progressive infections increases in immunocompromised patients.

In addition, receiving a booster dose five months after completing the initial two doses enhanced protection against infection by 11.3-fold and severe disease by 19.5-fold. According to the possibility of reduced immunity and the emergence of new variants of the SARS-CoV-2 virus, there are requests from various governments to receive booster vaccines by the public. Although some believe that booster doses are not currently needed for the general public, they agree that they will eventually be

needed for consideration (6). However, people refuse the licensed COVID-19 vaccines because their tendency to receive COVID-19 vaccines has decreased, and this matter can be less effective than other vaccines. Some people are less probable to have received at least one dose of the COVID-19 vaccine including people living in more deprived areas, those who have already been infected with COVID-19, people from ethnic minority groups, those who are smokers, and people who are unemployed or not working. Before vaccines were available to the public, some individuals were also unwilling or showed hesitancy to receive the COVID-19 vaccine, such as those from ethnic minority groups, as well as cases with lower household incomes and levels of education (5). People who are hesitant or reluctant have possible negative outcomes, and this can strengthen the suspicion of health institutions and care system; however, a feeling of coercion while being vaccinated can also lead to the "nocebo effect" and negative consequences may happen due to an opinion that the vaccine will harm them (7). Hence, on one side, many people are reluctant to receive booster doses and even the first and second doses. On the other hand, not receiving the vaccine is a serious threat to public health, and accordingly, in this study, we presented the main reasons why people do not want to be vaccinated, followed by suggestions for solving this concern:

- The unwillingness to receive reminder doses is a global problem; accordingly, countries must form some groups of different experts and in accordance with the culture, as well as literacy and information level of the people of each region, investigate the reasons for people's hesitancy across the world to receive booster doses of COVID-19 vaccines.
- One of the main reasons that people are refusing a booster dose of COVID-19 vaccines is the exact side effects of these vaccines which have not yet been determined. Therefore, manufacturers should

conduct more comprehensive studies and provide detailed reports in this regard.

- After vaccination in different countries of the world, especially receiving the full doses of the vaccine, COVID-19 disease spread more mildly in communities. Hence, many people, especially in developing countries, are convinced of the end of the pandemic. Therefore, they do not believe in receiving reminder doses, and this problem needs to be informed by governments and medical staff, and people should be aware of possible future mutations in the SARS-CoV-2 virus.
- Global statistics show that many people have not yet received the first dose of the COVID-19 vaccine. This problem should be given priority in the investigations of the Ministry of Health, especially in developing countries, and medical staff should convince people to receive the vaccine by providing detailed advice.
- Fear of side effects of receiving the vaccine is another factor among unwilling people to receive the vaccine, which can lead to a decrease in the strength of the immune system. Therefore, it is of utmost importance for different governments to identify these people, and it is crucial to refer them to specialist psychologists to address their fears, anxieties, and psychological problems.
- Since vaccination is not mandatory in many countries, having a reminder dose card for inter-country and inter-provincial travel is a good way to get reminder doses. Since people who receive the vaccine may be asymptomatic or have mild symptoms after contracting the disease, their travels can lead to the disease outbreak.
- There is a misconception among the general public that after receiving the first and second doses of the vaccine, they should not suffer from COVID-19; however, when they get infected with the disease, they think the vaccine has not been effective (they doubt the safety of vaccines against COVID-19). Therefore, they are not convinced to receive the booster dose; nonetheless, the vaccine prevents the severe form of the disease and minimizes the mortality rate. The public should be informed about this issue by specialists and medical staff.

- Many countries have used only one type of vaccine to vaccinate their people, which has reduced the tendency for vaccination. Perhaps if there is a variety of vaccines in different countries and people can choose their own type of vaccine, it will increase people's participation in vaccination.

The war between human beings and this evil virus has become eroding and exhausting, especially for the medical staff, who have been at the forefront of the fight for more than two years. On the other hand, following the protocols proposed by the World Health Organization (such as wearing mask, hand washing, observing a distance of three feet, avoiding unnecessary gatherings, etc.) has also become tedious for the general public; therefore, this vicious virus should be weakened, if unwilling people get vaccinated.

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