

## COVID-19 Vaccination and Usefulness in Prevention of Mortality Among the Elderly: An Analysis

Dear editor, COVID-19 is the new vaccine that becomes the hope for COVID-19 containment at present. Since COVID-19 pandemic is still the worldwide problem, the newly available vaccine is urgently registered and used in many countries. The main consideration is on the efficacy and safety of the new vaccine. Although there are some reports on COVID-19 vaccine clinical trials, the data are from studies among healthy adult subjects.<sup>[1,2]</sup> The specific clinical data on some specific population, such as pediatric, geriatric, and pregnant subjects, are absent. Nevertheless, the vaccine is recommended by local experts in some countries for using for some specific risk group including to the elderly. Due to the lack of clinical evidence, it requires a systematic evaluation before judgment whether the vaccination for the elderly is appropriate or not.<sup>[3]</sup>

Here, the authors focus interest on COVID-19 vaccination and usefulness in prevention of mortality among the elderly. A clinical mathematical modelling study is done. The primary data are the data on vaccine efficacy (preventive rate),<sup>[4,5]</sup> the data on mortality rate among the elderly with COVID-19,<sup>[6,7]</sup> and the death rate after getting COVID-19 vaccine among the elderly (0.115%).<sup>[8]</sup> A simulation study comparing the mortality rate in alternative node using versus no using COVID-19 vaccine is done. For calculation, the expected mortality rate in no using COVID-19 vaccine is directly quoted from primary data on naïve mortality rate of naïve case when there is no vaccine. Regarding the mortality rate in using COVID-19 vaccine, the expected mortality rate is calculate by  $[(1 - \text{protective rate or vaccine efficacy}) \times \text{naïve mortality rate}] + [\text{report post vaccine death rate}]$ . According to the analysis, the final expected mortality rate is lower in the alternative using COVID-19 vaccine [Table 1]. Giving COVID-19 vaccine can reduce mortality in the elderly up to 5.5465%-24.85%. Therefore, it is recommended that COVID-19 vaccination should be given for the elderly.

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**Table 1: Comparison between the expected mortality rate in alternative node using versus no using COVID-19 vaccine**

	No using COVID-19 vaccine	Using COVID-19 vaccine
Preventive rate (%)	0%	80%-95%
Expected mortality rate (%)	10.9%-26.6%	1.75%-5.435%

### Conflicts of interest

There are no conflicts of interest.

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