On Contribution of COVID-19 vaccines to control COVID-19 pandemic: from the mathematical modeling point of view.

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Abstract

Since December 2019, COV-SAR-2 virus has infected well over half a billion people and claimed close to 7 million lives. The devastating effect of the pandemic, both socially and economically changed the way we lived and perceived our lives. The discovery and 'successful delivery' of vaccines which is supported by a very intense public campaign helped us to get back to our normal way of living. Reports from several CDCs have shown that vaccines will not prevent one from getting infected but it reduces severity of the symptoms and consequently save lives. However, their effectiveness depends on the number of booster doses and other factors such as age and morbidity. In this talk we propose a simple epidemiological model that incorporates most features of the COVID-19 transmission dynamics to investigate the contribution of vaccines in the fight against COVID-19. Python *lmfit* library is used to fit the South African Covid-19 data from the open source to the proposed model. The conclusion of the work is based on the outcome of this fitting and theoretical investigation of the model.

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