Appendix:

Incidence of myopia with different follow up durations were evaluated by relative risk regression. Relative risk regression based on log-binomial model is an alternative to logistic regression where the parameters are relative risks rather than odds ratios[1]. Assuming the non-myopia incidence is stationary over the follow up duration, and the probability of a subject to develop myopia within the follow up duration can be written as an exponential function:

$$P(Myopia) = P(Y = 0) = 1 - \exp(\mu_t) = 1 - \exp(\mu \times time)$$
$$\Leftrightarrow P(Non - myopia) = P(Y = 1) = \exp(\mu_t) = \exp(\mu \times time)$$

where Y represents the observed indicator of non-myopia at the end of the follow up duration, $\exp(\mu_t)$ represents the cumulative incidence of non-myopia, $\exp(\mu)$ represents the annual incidence of non-myopia. To compare the incidence of myopia between the two cohorts with adjustment for age, gender and cohort time, the log-transformed annual incidence of non-myopia is modelled by

$$\mu = \beta_0 + \beta_1 \times I(COVID - 19\ \ cohort) + \beta_2 \times Age + \beta_3 \times Gender$$

where $I(COVID - 19\ \ cohort)$ represents an indicator function of whether the subject belongs to the COVID-19 cohort, β_0 denotes the intercept coefficient, β_1, β_2 and β_3 denotes the effect of COVID-19, age and gender to the incidence of non-myopia, respectively. If there is no difference in annual incidence of myopia (or non-myopia) between the two cohorts, β_1 will be zero, which can be tested using Wald test under the relative risk model.

1. Marschner, I. C. (2015). Relative Risk Regression for Binary Outcomes: Methods and Recommendations. Australian & New Zealand Journal of Statistics, 57(4), 437–462. doi:10.1111/anzs.12131