

# Diversity and defenses: Exploring the COVID-19 vaccine efficacy among different ethnic groups of Malaysia

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## ABSTRACT

**Introduction:** Number of vaccines, notably Comirnaty (BNT162b2), Vaxzevria (AZD1222), and CoronaVac, were given to Malaysia's multiethnic population to combat the increased disease burden brought on by COVID-19. **Objective:** To evaluate the differences in the duration-dependent antibody responses of two doses of Comirnaty, Vaxzevria, and CoronaVac vaccines across Malaysia's various ethnic groups. **Materials and Methods:** A multicentre prospective observational cohort study was conducted. The follow-up was completed by 242 participants. Peripheral blood samples were taken at week 0, week 2, week 4, week 8, week 12, week 16, week 20, and week 24 following the second dose of vaccination. Covid S-antigen specific IgG antibody was assessed from plasma sample by sandwich ELISA. The assay result was expressed as binding antibody units (BAU) per millilitre (BAU/mL). Kruskal-Wallis test was used to compare the anti-S IgG titre among different vaccines. One-way Anova was used to evaluate differences in antibody titre among the ethnicities. **Results:** Following the second dose, recipients of the BNT162b2 and CdAdOX1 vaccines maintained adequate levels of anti-S-IgG until week 24, whereas the CoronaVac group showed a significant decrease in antibody levels starting as early as week 8 ( $p < 0.05$ ). The antibody level after BNT162b2 vaccine peaked at week four after the second dose; in contrast, the anti-S-IgG for CdAdOX1 and CoronaVac vaccine peaked at week two. Across all ethnic groups, the BNT162b2 group continuously displayed greater antibody levels than the other groups. After week 16 of CoronaVac vaccination, there was a significant decrease in antibody in Malay population ( $p < 0.01$ ). At week 24, a significant decrease of antibody level was observed in Malay population after CdAdOX1 vaccine. **Conclusion:** All ethnic groups in Malaysia experienced a sustained antibody response to the BNT162b2 vaccine, however the rate of decline was faster for CoronaVac and CdAdOX1 vaccines, especially in the Malay community.