Article Review and Critique

Selected Article: Population-Based Evaluation of Vaccine Effectiveness against SARS-CoV-2 Infection, Severe Illness, and Death, Taiwan (2024).

Study Design

This study is a cohort study, a research design that follows a group of individuals (a cohort) over time to assess the incidence and outcomes of a particular exposure, in this case, COVID-19 vaccination, compared to non-exposure. The study investigates vaccine effectiveness (VE) against SARS-CoV-2 infection, severe illness, and death (Lee et al., 2024).

Key Features:

- **Prospective Nature:** The study observes participants, from vaccination to potential outcomes, over time.
- **Comparison Groups:** It includes vaccinated and unvaccinated groups to measure relative risks.
- **Temporal Sequence:** Ensures that exposure (vaccination) precedes the outcomes (infection, severe illness, and death).

Strengths and Limitations:

Cohort studies provide significant strengths in research, as they establish a clear temporal relationship between exposure and outcome, allowing for the investigation of multiple outcomes from a single exposure. However, these studies come with notable limitations: they can be time-consuming and expensive. Additionally, cohort studies are susceptible to losing follow-up, which can introduce bias into the results if the dropout rate is high.

Sampling Method

The study included the entire population of Taiwan eligible for COVID-19 vaccination, with exclusions based on incomplete records or receiving more than four vaccine doses. The sampling method appears comprehensive and representative, including a broad age range and accounting for various vaccine combinations (Lee et al., 2024).

Selection Bias:

- Potential Sources: Exclusions of individuals with incomplete data or those receiving more than four doses could introduce bias. However, these exclusions are necessary to maintain data quality.
- Representativeness: Given the large sample size and comprehensive coverage, the sample likely represents the target population, minimizing selection bias.

Data Collection Quality

Data were collected through national immunization and reporting systems, ensuring completeness and reliability. Using logistic regression models and stratified analyses by age and vaccine combinations adds robustness to the findings.