

Seroepidemiological studies on Japanese Encephalitis: a systematic review

ABSTRACT

Objectives: Japanese encephalitis (JE) is one of the major mosquito-borne infectious diseases in the Western Pacific region, accounting for 20%–30% of mortality cases. The JE virus (JEV) seroprevalence fluctuations indicate that continuous research is important for prevention and control activities. By mapping JEV seroprevalence by age stratification, the population profile for immunity and susceptibility can be identified to aid in vaccination program planning. Thus, this study aimed to determine the trend of age-specific JEV seroprevalence. **Methods:** We conducted a systematic review of all studies conducted on JEV seroprevalence between 2010 and 2019. The two search engines used were PubMed and Web of Science. Eligible criteria were set, and articles were screened according to the Preferred Reporting Items for Systematic Reviews and Meta- Analyses guidelines. Three investigators cross-checked all articles assigned. Data were extracted into an Excel sheet, and results were tabulated in tables and graphs accordingly. **Results:** Four studies from four countries (Taiwan, Sri Lanka, South Korea, and India) met the eligibility criteria. The papers showed an increasing trend of JEV seropositivity in all countries as their populations reach older age cohorts. Nonetheless, there were slight downtrend notches seen among young adults in Taiwan and India before increasing after reaching more mature ages. South Korea has the highest seroprevalence rate (97.8%–98.3%) among the compared countries. This is most likely because it was the earliest to introduce the JEV vaccine in 1967, which was later made mandatory in the early 1980s, while India has the lowest seroprevalence rate (12.9%–18.1%). Among the old vaccination-naïve population, seropositivity is commonly derived from natural infection. **Conclusions:** Decreases in reported JE cases are mainly due to immunization. As JEV is expected to remain in nature and the zoonotic chains, the risk of infection will persist. Hence, it is important to apply JEV vaccination protocols in national immunization programs, prioritizing young children.