

# Public Awareness of Dengue Fever and Willingness-to-Pay for vaccine of Dengue Fever : Case Study of south part of Taiwan

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PUBLIC AWARENESS OF DENGUE FEVER AND WILLINGNESS-TO-PAY FOR  
VACCINE OF DENGUE FEVER:

CASE STUDY OF SOUTH PART OF TAIWAN

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ABSTRACT

Public health issue is a significant concern in sustainability. In Sustainable Development Goals (SDGs), to ‘ensure healthy lives and promote well-being for all at all age’ is the general aim of SDG-3. One of the targets within SDG-3 is aimed to eliminate the Neglected Tropical Diseases (NTDs) by 2030. Dengue fever, as the topic of this research, is on the list of NTDs. However, the battle against dengue fever is a hard fight. Researches on medical treatment and vaccine against dengue fever is still ongoing. Although one vaccine was commercialized in some countries, the follow-up medical accidents caused by the side effects of vaccine appeared. These accidents then caused a ‘dengue dilemma’, which refers to the contradiction of whether the vaccine should be applied. Therefore, it is meaningful to understand the thoughts of people who are suffering from dengue fever in order to enhance the scientific development and public expectations of dengue vaccine in the future.

Based on this motivation, this study is aimed to reach three objectives: 1) investigate the public awareness of dengue fever, 2) analyze factors affecting acceptance and Willingness-to-Pay for dengue vaccine, and 3) design a preliminary model for dengue infection projection. After

literature review, the research sites are determined in Kaohsiung and Tainan in the south part of Taiwan where there have been epidemics of dengue fever for over 30 years. As for the objectives 1) and 2), an online-based questionnaire survey was conducted in December 2018 in which 310 responses were collected. The survey applied a Knowledge Attitude and Practice (KAP) survey tool and open-ended questions based on Contingent Valuation Method (CVM). As for the objective 3), the correlation between climate variables and infection cases of dengue fever was figured out and projection models including ARIMA and Random Forest were employed to fit the historical data.

The results indicate 1) respondents are well aware of dengue fever and actively fighting against it, however, a potential of vaccine hesitancy may exist in the future; 2) the factors affecting respondents' acceptance and Willingness-to-Pay include their knowledge of dengue fever, the family infection history, their feedback of mosquitos issues, the attitudes towards research and development(R&D) on the medical prevention and treatment of dengue fever, occupation, age. 3) a 3-month-lagged correlation between climate conditions and infection cases of dengue fever is figured out according to the data from 2010 to 2019 in Tainan and Kaohsiung. Here an Autoregressive Integrated Moving Average Model (ARIMA) using 3-month-lagged data will be a suitable projection model for the both cities

*Key words:* Dengue fever, Vaccine, South Part of Taiwan, Public awareness of disease, Willingness-to-Pay