

COMPARING THE TREND OF DENGUE CASES AFFECTED BY THE COVID-19 PANDEMIC IN KULAI DISTRICT

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ABSTRACT

INTRODUCTION: The trend of dengue cases in Kulai however did not follow the national trend with a decrease only occurring nine months after the Movement Control Order (MCO) in Malaysia. Thus, limiting reliable comparison on the dengue trend by using the conventional method of excluding the period between the start and end of the MCO. OBJECTIVE: To compare and select the best method of determining the period within the dengue timeseries affected by the COVID-19 pandemic. METHODOLOGY: This cross-sectional study involves all confirmed dengue cases in Kulai district registered in the eDengue system between the year 2016 to 2023. Two methods were used to determine the timeframe affected by the pandemic; (1) Year affected; The average weekly cases will be compared between the 8 years to select the year most affected by the COVID-19 pandemic. (2) Period affected: A changepoint analysis was used to determine the period between two weeks with significant change in dengue trend. Dengue cases within the selected time periods were excluded to create two different time series and subsequently compared using a Welch t-test due to their unequal length. RESULTS: For the first method, the year 2021 was selected for exclusion. For the second method, the period between week 49, 2020 and week 10, 2022 shows significant changes in mean trend with autoregression 1 and was selected. No significant difference was observed between the different time series. Thus, either method can be used to determine the period affected by the COVID-19 pandemic. CONCLUSION: A reliable comparison of disease data is paramount in observational epidemiological studies to ensure credible conclusion is being made from the analysis. Despite the negligible effects of the outlier period on the overall trend of weekly average number of dengue cases, practical exclusion of the 2021 data provides better visualization and comparison to the current year's trend. Therefore, when deciding for reporting, the balance between statistical outcomes and practical practices needs to be considered.

Keywords: Dengue, Pandemic, Time-series, Changepoint analysis
