Abstract of Master's Dissertation

No.1

Course	International Health Development (Master of Public Health)	Name	Koya Hatakeyama
Thesis Title	Heatstroke-related ambulance dispatch risk before and during COVID-19 pandemic: A stratified analysis by age, severity and incident place		

Background:

A prolonged COVID-19 pandemic has brought a significant impact on society across multiple sectors since 2020. Similarly, lifestyle in Japan has been changed significantly to prevent transmission of COVID-19 which specifically encourage mask-wearing, staying at home and social distancing. However, as summer approached, the Ministry of Health, Labour and Welfare has made public warnings that specific preventive measures may increase risk of heatstroke. In our previous work, we found lower risk of heatstroke-related ambulance dispatches (HSAD) during the COVID-19 period, however, it is uncertainty whether similar trend of risk reduction can be observed in different subgroup (i.e. age, severity and incident place). Given the critical need for maintaining medical resource under the increasing resource constraints due to the COVID-19 pandemic, identifying the risk group of HSAD is beneficial in developing an efficient strategy to overcome the pandemic while harmonizing with essential medical provisions.

Objective:

This study aimed to determine the HSAD risk before and during COVID-19 pandemic by subgroup of age, severity, and incident place.

Method:

A summer-specific, interrupted time-series analysis was performed, using daily HSAD and metrological data of 47 prefectures from 2017 to 2020. A two-stage analysis was applied to determine the association between HSAD and COVID-19 situation, adjusting for maximum temperature, humidity, seasonality, and long-term trend. A generalized linear model with quasi-Poisson in the first-stage was used to estimate the prefecture-specific HSAD risk, and a fixed effect meta-analysis in the second-stage was used to pool the effect estimate from 47 prefectures and computed the nationwide HSAD risk. Subsequently, a stratified analysis by age, severity, and incident place was used to analyze the variation of HSAD risk among subgroups.

＊ The abstract, containing the objective, method, result and conclusion should not exceed 300-500words and printed double sided on A4 paper)

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Result:

A total of 274,031 HSAD cases was analyzed across 47 prefectures in Japan. Overall, nationwide relative risk (RR) of HSAD was 0.80 with 95% confidence interval (95%CI): 0.77, 0.83, indicating lower HSAD risk during COVID-19. Based on the stratified analysis result, there was a uniform HSAD risk reduction in all subgroups during COVID-19 period. There was statistically significant difference of HSAD risk among age, severity, and incident place subgroup. As for age, the young subgroup exhibited the greatest reduction in the risk (RR=0.58, 95%CI: 0.54, 0.62), whereas a minimal risk reduction among the elderly subgroup was observed (RR=0.86, 95%CI: 0.83, 0.90). As for severity, the mild subgroup exhibited larger reduction in the risk (RR=0.76, 95%CI: 0.73, 0.79) than moderate subgroup (RR=0.87, 95%CI: 0.83, 0.91). As for incident place, indoor public space (RR=0.58, 95%CI: 0.54, 0.62) and outdoor public space (RR=0.61, 95%CI: 0.58, 0.65) subgroup exhibited the greatest reduction in the risk, whereas there was a minimal risk reduction at home, all-workplace, school, and road subgroups.

Conclusion:

The COVID-19 situation has led to substantial reduction on HSAD. Furthermore, the effect of COVID-19 situation exhibited a uniform reduction in the HSAD risk for all subgroups, but the magnitude varied by age, severity, and incident place.

(476 words)

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