

Effect of Environmental Temperature in the Spread of COVID-19 with Reference to the 2nd Wave in Sri Lanka

BCIJ Nanayakkara^{1#}, C Sooriyabandara² and DBYJ Kumari³

¹*Faculty of Medicine, General Sir John Kotelawala Defence University,*

²*Base Hospital Chilaw,*

³*Teaching Hospital, Karapitiya*

#drcharithnanayakkara@gmail.com

Most respiratory tract infections are seasonal so the effect of environmental temperature in COVID-19 is an important fact which hasn't been extensively researched. Environmental temperature of countries with extremely high vs. low COVID-19 cases were compared in April and May, 2020 according to the World Health Organization Coronavirus disease 2019 (COVID-19) Situation Report - 85 and 116. Altogether 213 countries/territories were analysed. Top 24 countries (countries had over 1000 cases in March 2020) with the highest number of COVID-19 cases and 113 countries with lowest cases (countries had less than a 100 cases in March 2020) were separated into two groups. April 15th - May 15th, 2020 marked the average of 9.4°C (SD-7.1) and 16.3°C (SD-8.3) temperatures in the top 24 countries while the bottom 113 countries recorded 22.4°C (SD-7.5) and 24.3°C (SD-7.6) respectively. The values were taken in two days to minimize the error due to short term fluctuations in temperature and cases within the same season. The temperature difference between above groups in respective time windows were 13.0°C (t = 7.8 and p < 10⁻⁴) and 7.4°C (t = 4.3 and p < 10⁻⁴) which was extremely statistically significant. Environmental temperature is extremely significant in the spread of COVID-19, similar to common flu, taking into account that other factors like humidity, rainfall, sunlight and new mutations can possibly have an effect which was not analysed in this study.

Keywords: *COVID-19, environmental temperature, seasonal variation, risk factors, spread*