Association between environmental temperature and self-harm behaviour in Sri Lanka

P.H.G.J. Pushpakumara[1] and A.H. Dawson[2]

Abstract

Self-harm behaviour is a global public-health problem. Though the effect of global warming on human behaviours have received increasing attention, little was paid to whether temperature is associated with suicidal behaviour. However, researchers have suggested that increased environmental temperature has a substantial effect on conflicts, which is a known trigger for impulsive self-harm. The study was conducted to determine the correlation of environmental temperature with fatal and non-fatal self-harm in Sri Lanka. District-based data on suicide and average annual temperatures were extracted from Registrar General's Department and Department of Meteorology, for selected 18 districts from 2000-2006. A sub-study was conducted at Kurunegala District (KD) where more data were available on date/time of the suicide attempt by self-poisoning (DSP) and daily environmental temperatures (ETEMP) in 2012-2013. There was no association between crude suicide rate and average annual temperature at district level data. A total 10,376 cases were reported in KD and minimum and maximum average daily environmental temperatures (ETEMP) were 23.6 ^{0}C and 30.4 ^{0}C for the period, respectively. Median average ETEMP at KD was 27.7 ^{0}C (IQR 26.8 – 28.5). The median number of DSP events happened during the days that the average ETEMP <= 26.8 ^{0}C (Q1) was 12 (IQR 9-16). It was 13 (IQR 10-16), 14 (IQR 11-17) and 15 (IQR 12-19) on the days that the average ETEMP 26.9 ^{0}C - 27.7 ^{0}C (Q2), 27.8 ^{0}C – 28.5 ^{0}C (Q3) and > 28.5 ^{0}C (Q4). Mann Whitney test analysis showed that the number of DSP events happened on high temperate days where (ETEMP > 27.7 ^{0}C) was significantly higher than the other days, $p<0.0001$. The variation observed in ETEMP at six different points of the day (at 05:30h, 08:30h, 11:30h, 14:30h, 17:30h and 20:3h) was similar with the pattern of occurrence of DSP events. Further, highest proportions of DSP events were happened in the highest temperature period or just after the highest temperature period of the day, 21.0% (95% CI 20.2-21.7%) and 20.9% (95% CI 20.1-21.6%). There is a positive association between ETEMP and number of self-harm events, which may be masked by other confounders. In-depth exploration is important for confirmation.

Keywords: *Environmental-temperature, Self-harm, Suicide, Temperature*

[1] *Department of Family Medicine, Faculty of Medicine & Allied Sciences, Rajarata University of Sri Lanka.*

[2] *Sydney Medical School, University of Sydney, Australia. Corresponding author's email: janakatechno@gmail.com*