

Press Release

**Press Conference on Research Findings
jointly organised by the Faculty of Social Sciences of HKU and CADENZA**

**Does Very Hot Weather Warning Reduce
Mortality among Elderly People in Hong Kong?**

A recent research study conducted by the project *CADENZA: A Jockey Club Initiative for Seniors* in collaboration with the Faculty of Social Sciences of The University of Hong Kong and the Faculty of Medicine of the Chinese University of Hong Kong showed that this warning might help to reduce mortality among elderly people in Hong Kong.

Background

There is evidence that extreme hot weather is associated with increased mortality. In France, the 2003 heat wave (7 days with $>40^{\circ}\text{C}$) killed 14,802 people, who were mainly elderly. Elderly are more vulnerable mainly because they have diminished capacity to detect outside temperature and deteriorated ability to regulate body temperature. Furthermore, the limited adaptive ability may also be affected by pre-existing diseases and/or the use of medications.

While the summer in Hong Kong is not fatally stressful, elderly mortality has been shown to be associated with weather stress in summer. To alert the public about the possible risk of heat stress, the Hong Kong Observatory introduced the Very Hot Weather Warning (the Warning) in 2000. When the weather stress index exceeds a threshold, the Hong Kong Observatory issues the Warning and relevant Government departments and the general public take various preventive measures. Does the Warning, accompanied by various preventive measures reduce mortality among elderly people in Hong Kong?

Research Method

The daily numbers of death from ischaemic heart disease and stroke among the Hong Kong population aged 65 or above occurred on days with maximum temperature at least 30.4°C in summer 1997 to 2005 were extracted for statistical analysis.

Results

During the study period, there were 709 days with maximum temperature at least 30.4°C, and the Warning was issued on 115 days while not issued on the remaining 594 days. A total of 4,281 deaths from ischaemic heart disease and 4,764 deaths from stroke among the elderly population were included for the analysis.

On days with maximum temperature at least 30.4°C, the average daily numbers of death among the elderly population, both from ischaemic heart disease and from stroke, were smaller on days with the Warning as compared to days without. For ischaemic heart disease, the average daily numbers of death among the elderly were 5.5 and 6.1 for days with and without the Warning respectively. For stroke, the average daily numbers of death among the elderly were 6.5 and 6.8 for days with and without the Warning respectively. (Figure 1) After taking into account the age-sex composition and population size, it was shown that the Warning was significantly associated with lower daily mortality rates from the two causes among the elderly.[†] Based on the fitted models, if the Warning were issued on the days without the Warning, the estimated numbers of death from ischemic heart disease and stroke on these days would be reduced by 18% and 13% respectively. (Figure 2)

Owing to the observational nature of this study, we cannot prove the causation effect of the Warning. Nevertheless, the findings and theoretical backup are consistent, which support the possible protective effect of the Warning. More in-depth research should be taken to investigate the causation effect of the Warning on mortality.

Conclusion

On days with maximum temperature at least 30.4°C, elderly mortality from ischaemic heart disease and stroke, was lower on days with the Warning. If heightened public alertness due to the Warning is the major cause of the reduced elderly mortality, public education, targeted at the elderly and their caregivers, is needed to inform them on how to take appropriate measures during the days with heat stress. Furthermore, as elderly are more vulnerable, preventive measures against heat stress should also be taken by the elderly and their caregivers even if the weather is not stressful to the general population.

Note: [†] Two outliers were excluded from the analysis of deaths from stroke.

Practical Tips

On hot days, individuals, especially the elderly and those with cardiac and respiratory conditions, should

1. drink more than 8 cups of water or fluid,
2. seek well-ventilated or air-conditioned shelter,
3. limit exposure to high heat in the afternoon,
4. reduce vigorous physical exercises, particularly when outdoor,
5. wear light colored and thin clothing,
6. be more alert to health conditions and seek help when symptoms emerge.

As elderly are more vulnerable to heat stress than the general population, the Government can consider warning system tailored for the elderly. The public, particularly the caregivers, should pay extra attention to the elderly around them even when the heat stress is not considered stressful to the general population. Also, it is important to reduce the occurrence and severity of hot weather conditions by reducing heat-island effect and fighting global warming collectively.

Should you have any further questions, please feel free to contact Dr Patsy Chau of the CADENZA project at 2219 4274.

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