

3rd International conference on

Palliative care

February 14-15, 2022 | Webinar

Heat wave and elderly mortality: historical analysis and future projection for metropolitan region of São Paulo, Brazil

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The Metropolitan Region of Sao Paulo (MRSP) is one of the main regions of Brazil that in recent years has shown an increase in the number of days with heat waves, mainly affecting the health of the most sensitive populations, such as the elderly. In this study, we identified the heat waves in the MRSP using three different definitions regarding the maximum daily temperature threshold. To analyze the impact of heat waves on elderly mortality, we used distributed lag nonlinear models (dlnm) and we quantified the heat wave-related excess mortality of elderly people from 1985 to 2005 and made projections for the near future (2030 to 2050) and the distant future (2079–2099) under

the climate change scenarios RCP4.5 and RCP8.5 (RCP: Representative Concentration Paths). An important aspect of this research is that for the projections we take into account two assumptions: non-adaptation and adaptation to the future climate. Our projections show that the heat wave-related excess of elderly mortality will increase in the future, being highest when we consider no adaptation, mainly from cardiovascular diseases in women (up to 587 deaths per 100,000 inhabitants per year). This study can be used for public policies to implement preventive and adaptive measures in the MRSPy.