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Mortality and Transmissibility Patterns associated with the 1918 Influenza Pandemic in Three Latin American Settings

While the mortality burden of the devastating 1918-1920 influenza pandemic has been carefully quantified in the US, Japan, and European countries, little is known about the pandemic experience elsewhere. We undertook extensive archival collection efforts to quantify the pandemic mortality patterns and estimate transmissibility of the pandemic in two Mexican cities (Mexico City and Toluca in central Mexico), the department of Boyaca Colombia, and three Peruvian cities (Lima in the central coast, Loreto in the northeastern Amazon region and Ica in the central south coast). We applied seasonal excess mortality models to age-specific monthly respiratory mortality rates for 1917-1920 and quantified transmissibility estimates based on the daily growth rate in respiratory deaths. Historical studies from understudied areas are particularly important to document the global mortality and transmission patterns of the 1918 pandemic and reveal substantial variations between locations. In particular, we found no senior sparing in Latin American settings which is sharply different from what was observed in the US and Europe. These areas were relatively isolated in the 19th century, which has implication for the circulation of historical influenza viruses and baseline population immunity to influenza. We believe this finding offers insight into the underlying mechanism for elderly sparing and points to recycling of influenza viruses as the best explanation. Preservation and interpretation of archival epidemiological data are key for a better understanding of past pandemics, and most importantly, for better preparedness against future pandemic events.