

FLU TRANSMISSION IN A SAHELIAN CITY: TEMPERATURE PLAYS A MAJOR ROLE AT NIAMEY, NIGER

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Background and aims: Flu threatened the world during four pandemics that occurred within the last century and recently in 2009. Temperature and humidity seem the main climatic factors involved in flu transmission. This study aimed to provide insight on the role of meteorological factors on flu transmission in Niamey, a Sahelian city that exhibits climate particularities of a very long dry season with consistently hot temperatures.

Methods: In April 2009, a surveillance system for flu composed of ten sentinel sites in Niamey was set up by CERMES, the national research institute of Niamey, Niger. A nasopharyngeal swab was taken from subjects with influenza like illness or severe acute respiratory illness symptoms attending the sentinel sites and analyzed by RT-PCR. Long-term trend, seasonality, day of the week, holidays and religious periods were taken into account in a generalised additive model to link temperature, humidity, wind speed and visibility with daily counts of biologically confirmed influenza cases between 1st June 2009 and 31 May 2010.

Results: Seventy six among 319 subjects were positive (23.8%) for influenza virus, comprising 46 A/H1N1(2009), 19 A/H3N2 and 11 influenza B. Positive cases were detected more frequently during cold and rainy seasons, with respectively 46.9% and 34.4% of positive subjects. Minimal temperature between 13 and 22°C and visibility were significantly and positively correlated respectively three days and one day before the occurrence of flu cases ($\beta = 3.99$, $p = 0.022$ and $\beta = 3.30$, $p = 0.014$, respectively).

Conclusions: The occurrence of flu cases could be related to the lowest minimal temperatures mainly found during cold season and to the highest values of visibility occurring during rainy season. This work brought new evidence on the important role of temperature in the transmission of flu in a Sahelian tropical city like Niamey, Niger.