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Effects of Dust Storm Events on Tuberculosis Incidence Rate in Northwest of China

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Abstract : Tuberculosis (TB) is a major public health problem in China. China has the world's second largest tuberculosis epidemic (after India). Xinjiang almost has the highest annual attendance rate of TB in China, and the province is also famous because of its severe dust storms. The epidemic timing starts in February and ends in July, and the dust storm mainly distribute throughout the spring and early summer, which strongly indicate a close linkage between causative agent of TB and dust storm events. However, mechanisms responsible for the observed patterns are still not clearly indentified. By comparing the information on cases of TB from Centers for Disease Control of China annual reports with dust storm atmosphere datasets, we constructed the relationship between the large scale annual occurrence of TB in Xinjiang, a Northwest province of China, and dust storm occurrence. Regional atmospheric indexes of dust storm based on surface wind speed show a clear link between population dynamics of the disease and the climate disaster: the onset of epidemics and the dust storm defined by the atmospheric index share the same mean year. This study is the first that provides a clear demonstration of connections that exist between TB epidemics and dust storm events in China. The development of this study will undoubtedly help early warning for tuberculosis epidemic onset in China and help nationwide and international public health institutions and policy makers to better control TB disease in Norwest China.

Keywords : dust storm, tuberculosis, Xinjiang province, epidemic
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