

Influence of Climatic Factors on Typhoid Fever: A Systematic Review

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Background: Climate change is predicted to influence seasonal climate patterns and the severity of extreme weather events, which could have a substantial effect on typhoid and paratyphoid transmission. We conducted a systematic review to determine the association of seasonal climatic variables and typhoid fever.

Methods: We searched EMBASE, MEDLINE, Global Health and Web of Science for epidemiological studies of any design published before May 16, 2016, screened titles and abstracts, and extracted data in duplicate. Eligible studies evaluated the association between typhoid fever and precipitation, temperature or major climatic events. We examined these associations by geographic region, study setting and design, and by the socioeconomic status of the study population.

Results: The search yielded 12,934 studies after de-duplication, of which 30 were included in our final analysis. The majority of studies were conducted in Asia (60%) and Africa (20%) and in low-income, urban settings. Most of the studies (70%) did not use quantitative analytical methods and only described the association of interest. Twenty-eight of the studies assessed the pattern of typhoid fever in the context of wet and dry seasons, which were defined by seasonal precipitation, flooding, or drought. In Asia, 75% of the studies found a positive association between typhoid fever and wet monsoon conditions, while in Africa, 66% of studies reported a positive association between typhoid fever and seasonal drought.

Conclusion: Our analysis suggests that there are distinct geographic trends in the association between typhoid fever and seasonal climate variables, but few studies have tried to quantify these relationships. This review highlights the importance of climatic factors on typhoid fever transmission. A better qualitative and quantitative understanding of the relationship between climatic factors and typhoid seasonality can aid the prevention typhoid fever and mitigate the effects of climate change.