

ABSTRACT

Association between Paediatric Asthma Admissions, Saharan Dust, Meteorological Parameters, and Airborne Pollen Content in Trinidad and Tobago

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Research has shown that the constituents of the Saharan dust plumes which circumnavigate the globe can potentially affect many countries. Further investigation is required to determine the constituent of the aerobiota, including pollen, transported on these dust plumes and its health consequences. In addition, information on local airborne pollen and its effect on paediatric asthma are currently deficient.

The general objective of this study was to examine the hypothesis that paediatric asthma admissions in Trinidad was some function of airborne pollen (local and dust borne), particulate matter 10 microns in diameter or less in Sahara Dust, and selected meteorological parameters. This was achieved through a retrospective ecological study of Saharan dust and airborne pollen at inland and coastal sample sites, meteorological factors, and paediatric asthmatic patients treated at a nearby medical facility.

The results showed that pollen concentration at the inland site was higher than at the coastal site, and that pollen concentration at the coastal site was very low during periods of increased Saharan dust. The results suggested that dust and local

pollen, in combination with other factors, may influence paediatric asthmatic incidence, and also suggested the existence of a threshold level and a lag between these irritants and asthmatic symptoms.

The findings did not support the aspect of the hypothesis that Saharan Dust pollen in conjunction with other variables affected paediatric asthma admissions, but suggested that pollen may have been a constituent of the dust plumes though not in sufficient load to increase asthma admittance.

Using polynomial regression in SYSTAT, the existence of a time related association with a predictability of 84.5% was shown between paediatric asthma admissions, local pollen, dust and meteorological factors, involving linear and quadratic interactions acting in concert.

A similar forecast model for pollen concentration was also developed with a predictability of 76.9%.

Keywords: asthma admissions; children; Saharan dust; Caribbean; pollen forecast model; asthma forecast model.