RELATIVE IMPORTANCE OF CONCURRENT EXPOSURES TO MULTIPLE INDOOR BIOLOGICAL AGENTS ON CHILDHOOD ALLERGY AND REPORTING SYMPTOMS

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Background and Aims: Literatures have consistently demonstrated associations between exposures to different kinds of bioaerosols in indoors and increasing risk of respiratory and allergic diseases, however, mostly based on measurements of single or selected agents while environmental microbes and allergens are often co-existing in nearly all environments at all times in reality. This study conducted concurrent assessment of related bioaerosol indicators to elucidate their individual or synergistic roles deriving at corresponding childhood health outcomes of concerns.
Methods: A total of 101 children (3-9 years old), recruited from a prior cross-sectional questionnaire survey, were investigated for exposure levels of fungal spores, total culturable bacteria and fungi in the air of their bedrooms, and the concentrations of endotoxin, 1,3-β-D-glucan and *der* p1 allergen in dusts on their bed. The health status of each child was verified during a clinic visit, and parents kept symptom diaries for the week during which environmental sampling took place on the 1st day of the week. Multivariate logistic regression models were applied to characterize the relative importance for individual bioaerosol indicator after adjusting mutually for each other, and other confounding factors, reported as aOR.
Results: Increasing concentrations of culturable fungal I/O ratio, endotoxin and glucan were associated with higher risk to be characterized as being the case subjects (aOR= 2.78), to report physician-diagnosed allergic rhinitis (aOR=1.60) and eczema (aOR=2.28) during clinical examination, respectively. Moreover, the level of culturable fungal I/O ratio (aOR=3.61) was found for influencing the presence of childhood reported respiratory symptoms while getting up as well as the concentrations of fungal spore (aOR=16.25) and *der* p1 (aOR=1.54) allergen were associated, respectively, with reported respiratory symptoms during sleeping and during daytime of children.
Conclusions: It was the first study to reveal the synergistic effect of various bioaerosol indicators on children health in tropical Asia where higher bioaerosol levels were reported frequently.
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