

A Novel Tool Supplying Aeroallergen Information and Allowing for Online, Personalized Symptom Monitoring

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Background: Pollen and fungal spores are the most abundant allergen carriers in outdoor air. Pollen allergies affect up to 30% of the German population, causing allergic rhinitis, conjunctivitis and asthma, whereas information about fungal spore allergies in Germany are scarce. Fungal spores have however been associated with the phenomenon of “thunderstorm asthma” in other regions of the globe. It is likely that sensitizations to fungal spores and their clinical relevance are currently underestimated. Smartphone-based “pollen apps” have been available for several years, however, data on the clinical benefit is missing to date. Current “pollen apps”, such as PID’s “Pollen” and “Hustublume”, distributed via the Techniker Krankenkasse, consist of a symptom diary and pollen information based on short-term forecasting models. Throughout the main pollen season, those apps send the users daily reminders to enter their symptoms.

Aim of study and methods: We aim at the development of a novel smartphone-based allergen app that supplies near real-time (3-hourly) pollen and fungal spore information via an automated aeroallergen monitor (“PoMo”; Hund, Wetzlar, Germany). Moreover, the app is supposed to allow patients to enter their symptoms at the very moment they occur, and to supply personalized advice on exposure-relevant behavior and medication to minimize future symptoms. The clinical benefit of receiving aeroallergen information will be evaluated in a randomized controlled trial. In this trial, all patients will be asked to enter their symptoms in the app during their respective allergen season. One group receives near real-time aeroallergen information, a second group receives information based on currently used forecasting models and a third group receives no aeroallergen information at all.

Conclusion: Apart from possible clinical benefit, the app will be a useful tool for exposome research, since it will supply researchers with a high time-resolution of symptom and aeroallergen data.