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What Google® knows about the pollen season

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Keywords: allergen exposure; allergic rhinitis; google; pollen; pollen-measuring station.

Allergen exposure represents the most decisive factor for symptoms building-up in allergic conditions, and the determination of its expected patterns is important both in terms of time and for each individual patient (1). On the other hand, the high costs of the instruments required for pollen counting limit the capacity to construct comprehensive pollen networks covering all planes and make it impractical to install pollen measuring stations at dense intervals [with few but notable exceptions like Kuwait (2)].

It has been previously demonstrated for conditions with similar epidemiological fluctuation that the curve for exposure to the influenza virus, for example, and the incidence of influenza in the flu season were well reflected by a frequency curve for the number of searches for 'flu' and flu-related terms (3) generated by a specialized Google® search tool (4). We then decided to examine the usefulness of this search model in the field of pollen exposure and arrived at astonishingly strong

correlation results, when we used the search engine 'Google® Insights for Search' to analyze and display the number of Google® requests for terms like 'hay fever' within the time period from January 2010 to the end of September 2010.

We obtained data about the official pollen counts for birch pollen (an early bloomer) and grass pollen (a late bloomer) from the Foundation German Polleninformation Service (5) and the German Meteorological Service (6) for the above-mentioned time period, then merged the two graphs together.

Google® Insights for Search provides the possibility to '...compare search

volume patterns across specific regions, categories, time frames and properties' (4) and to process them into normalized values, lying on a scale of 0 to 100, then present them graphically as a curve. We used Google® Insights to build a representation of the quantitative distribution of searches or 'Google® requests' for the terms related to 'hay fever' for a particular state in Germany, North Rhine-Westphalia. Google® counts the total number of searches for a term at the end of each week. We extracted all these values for the period between the 3rd of January and the 25th of September and assigned them to the first day of each respective week.

This is a statistical comparison of real pollen flight data with correlated internet-based searching requests.

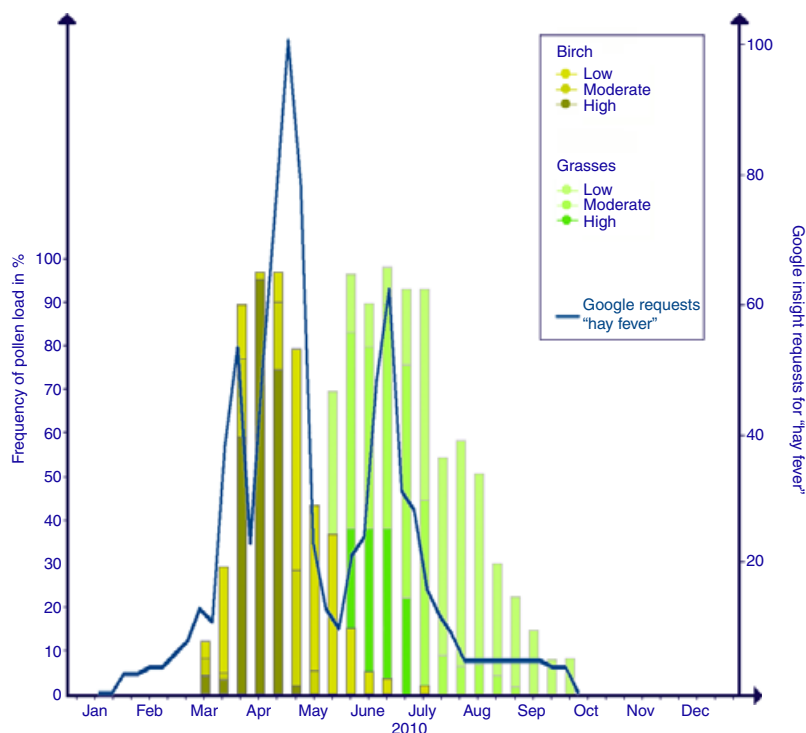


Figure 1 Comparing birch and grass pollen counts with the frequency of searches for the terms related to 'hay fever'.

We then overlaid the two figures, the actual pollen count curve and the hay fever search trend, and the resulting figure illustrated a clear similarity between the curves. The Google® query frequency distribution curve corresponded to and portrayed the actual local pollen count for that time period quite accurately (Fig. 1).

We see that it is possible, using geographically customized search options and further fine-tuned analysis techniques, to extract local query data about the regional patient concern from the Internet, then use these to attain more detailed and refined symptom load analyses. These may in future possibly complement pollen measurements.

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