



EMS Annual Meeting Abstracts

Vol. 18, EMS2021-112, 2021

<https://doi.org/10.5194/ems2021-112>

EMS Annual Meeting 2021

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The Patient's Hay-fever diary: users feedback can improve pollen information

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Background: Pollen information is crucial for effective preventive behaviour of pollen allergy sufferers. In addition to the results of pollen monitoring and weather conditions, feedback from allergic people plays an important role in generating information for the public. A useful tool that gives us an insight into the burden of pollen allergy is the patient's hay fever diary (PHD), developed by the Vienna Medical University. PHD is freely available online, users enter their location, general well-being, pollen symptoms and medication use.

Methods: This study is based on two databases: 1- PHD data for symptom load index (SLI) calculations, only daily entries from Slovenia were used; 2- National pollen database for three measuring stations: Ljubljana, Maribor and Izola. A five-year period (2014-2018) was analysed. We reviewed the number of monthly entries as an indicator of the time span when most people need pollen information. The focus was on three high allergenic pollen types; birch (*Betula*), grass (*Poaceae*) and ragweed (*Ambrosia*). Annual pollen load (APL) allows us to compare results between years.

Results: 60 % of yearly entries were recorded from March to May, when users reported the most problems with pollen-induced symptoms. In parallel the monthly pollen totals were high. Birch pollen season typically occurs from late March to end of April with May marked by grass pollen season. The highest SLI values were calculated for birch pollen (4,79 – 7,68), with the maximum in the year 2016 when the highest APL was also recorded. SLI for grass pollen season varied from 3,92 to 4,80 and is mostly lower than SLI for birch. SLI slowly decreased after May and rose again in August and September, when ragweed pollen occurs. Results for this non-native species show that SLI was increasing from 2,48 (2014) to 4,55 (2018).

Conclusion: Pollen information is most sought after in the spring, when the highest daily concentrations are recorded. Birch pollen seems to have the highest impact on allergy sufferers, followed by grasses. In the case of ragweed we have noticed that the impact on health was increasing during the analyzed period. A comparison of the calculated SLI with the level of exposure to different pollen types may explain the fluctuations in the occurrence of allergic disease during the course of pollen seasons. Preventive behaviour of allergic persons is only possible with quick and accurate pollen information. Therefore, we started releasing preliminary results with a three-color scale to keep the public informed about the current state of allergens in the atmosphere.