

DO PEOPLE KNOW ENOUGH ABOUT POLLEN INFORMATION IN HUNGARY?

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ABSTRACT

Ragweed pollen allergy is a public health concern affecting more than 1 million people in Hungary. Reliable pollen information is important in reducing the health impact of pollen on allergic people during the ragweed pollen season. In order to get information on the knowledge of people on pollen information service and on the use of this kind of information, a questionnaire survey was conducted. In total, 72% of the people with ragweed pollen allergy followed reliable pollen information. The most important communication media was television followed by webpages and radio. People allergic to ragweed pollen found the pollen information service, especially the pollen concentration forecast, useful. The interest in new services such as a mobile phone application providing personalized pollen-related symptom forecasts for ragweed is high.

KEY WORDS: allergy, communication, pollen information, questionnaire, ragweed

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INTRODUCTION

There are more than 1 million people suffering from allergy and asthma due to the pollen of the common ragweed (*Ambrosia artemisiifolia* L.) in Hungary. The pollen grains are ubiquitous in the air during the pollination of ragweed which usually starts at the end of July, reaches its maximum level in late August and ends at the beginning of October. In order to reduce the health impact of pollen, it is necessary to provide appropriate pollen information for pollen allergy sufferers (Kiotseridis et al., 2013). Reliable pollen information is (i) based on the scientific evaluation of the pollen content of the air and additional parameters, (ii) provided by experts and (iii) distributed by various communication media to reach a large audience (Bastl et al., 2017). Similarly to weather forecasts, nowadays, there is a high demand for pollen concentration forecast from the public. It should be noted that the forecast methods require several sources of information such as weather forecast, long series of pollen concentration data or phenological monitoring of the vegetation (Prank et al., 2013; Csépe et al., 2014). Thus, only institutions involved in pollen monitoring or research can provide reliable pollen concentration forecast. This kind of pollen information has been proven to be a valuable tool to moderate the symptoms of allergic people (Kmenta et al., 2014). Moreover, pollen information/forecast is an important parameter for allergologists taking care of patients with pollen allergy. However, most of the people suffering from pollen allergy do not consult regularly with their doctor, thus the responsibility of institutions providing pollen information is high.

In Hungary, there are 20 aerobiological monitoring stations distributed in the country and operated by the National Public Health Center (NPHC). In 2018, pollen information on ragweed was provided to the public through pollen concentration forecasts based on the neural network and the forecast maps were updated daily providing information for the given day and the following two days. Moreover, the experts of NPHC regularly informed the public about the actual and prospective pollen concentration levels in the communication media (e.g., TV, radio). Besides pollen information, the daily communication activities included advice on how to reduce the exposure to high pollen concentration and the expected allergic symptoms based on the prospective pollen concentration and threshold values. In order to improve the pollen information services, it is important to get feedback from the people affected by pollen allergy.

MATERIALS AND METHODS

Questionnaire design and survey

In the frame of the European Mobility Week, the experts of the NPHC presented their activities at the event for 2 days (15-16 September, 2018) and provided information on pollen-related issues such as (i) pollen monitoring; (ii) allergenic plants; (iii) advice and (iv) myths and facts. In addition, people were invited to fill-in a short questionnaire anonymously about the pollen information and services. Some basic questions on allergy and personal data were also asked. The questionnaire was distributed on paper and was designed as follows:

1. Do you follow pollen information? (yes; no)
2. How do you follow pollen information? (webpage; mobile phone application; TV; radio; Facebook)
3. What is the source of pollen information that you follow? (National Public Health Center; others; I do not know)
4. Do you find the pollen concentration forecast/advice/other information of the National Public Health Center useful? (yes; no; I do not know)
5. Why are you following pollen information? (I am interested in the pollen concentration forecast; I want to plan my medication, I want to plan my outdoor activities and trips)
6. Do you think that personalized pollen-related symptom forecast information would be useful? (yes; no)
7. Are you allergic? (yes; no)
8. Are you allergic to the pollen of ragweed? (yes; no)
9. Did a doctor diagnose your pollen allergy? (yes; no)
10. What is your gender? (female, male)
11. What is your age group? (under 10; 11-20; 21-30; 31-40; 41-50; 51-60; 61-70; over 70)

RESULTS AND DISCUSSIONS

Outcomes of the survey

The results of the survey regarding the general questions (i.e. allergy, personal data) are depicted in *Figure 1*. In total, 524 questionnaires were filled in during the event which indicates the high interest of people about pollen allergy. Based on the answers, allergy was reported by 342 people out of the 524 cases. About 82% of them (282 people) suffered from the pollen of ragweed. It should be noted that this data is higher than the results of representative, published or unpublished surveys carried out in the past years (Vörös et al., 2018). The NPHC provides pollen information for about 40 different plants, but the most detailed information is available for the pollen of ragweed, as it causes most of the allergic symptoms in Hungary. The high percentage obtained for ragweed pollen allergy in this survey might be due to the intense communication activities on ragweed as well as the event taking place during the ragweed pollen season, which also might have had an effect on the results.

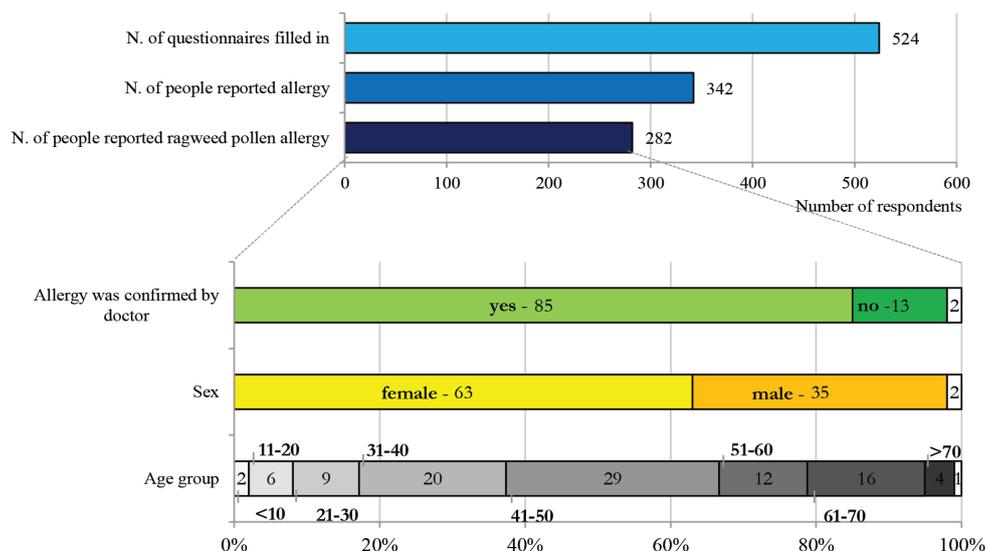


Figure 1. Results of the survey regarding the general questions (i.e. allergy, personal data).

Ragweed pollen allergy was diagnosed by a doctor in 85% of the cases (239 people), while some people reported allergy without confirmation (13%) and a few questionnaires had this question unanswered (2%). Women overtook men in the number of volunteers by a factor of 1.8. The age distribution shows that most of the volunteers were in their thirties and forties. It is not surprising as mainly families with children visited the event.

Most of the people affected by the pollen of ragweed (93%) followed pollen information and only a small subset of people affected by ragweed pollen (7%) did not check any information on pollen. Pollen information was followed by people who did not report allergy with a high percentage (79%) as well, which indicates that the population is interested in this well-known public health issue. It should be noted that the term “pollen information” was not familiar for several volunteers. Many people reported the way how they follow the pollen information; however, the first question (Do you follow pollen information?) remained unanswered.

According to the results, the most important communication media regarding pollen information was television followed by different webpages, radio, Facebook and mobile phone applications among the people who reported ragweed pollen allergy and followed pollen information (Figure 2).

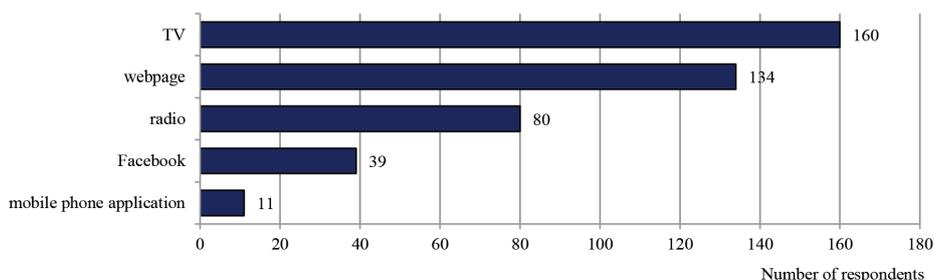


Figure 2. The popularity of different communication media among the people who reported ragweed pollen allergy and followed pollen information (263 people).

Approximately half of them (52%) followed only one communication medium. However, 36%, 11% and 1% of the people allergic to ragweed pollen checked pollen information through 2, 3 and 4 communication media, respectively. The main source of pollen information is the NPHC. Approximately 77% of them followed the information provided by the institute responsible for pollen monitoring and communication. The institute distributes the pollen information through various communication media except for mobile phone application. There are several webpages operated by others where the pollen information published by the NPHC is used. Approximately, 3 % of volunteers with ragweed allergy visited those webpages, while only a few people (2%) checked webpages with not reliable information. Others (18%) did not know the source of the pollen information which indicates that, in general, a considerable amount of people are not interested about the source of information.

Most of the people who followed pollen information provided by the NPHC found the information and services useful (*Figure 3*). The highest percentage was obtained for the ragweed pollen concentration forecast, followed by the advice of experts and the other pollen-related materials. One of the most effective ways to minimize allergic symptoms is to avoid allergen exposure (Kiotseridis et al., 2013). Pollen information is an important tool of patient education and increases awareness of the disease, as well. The allergic person can avoid activities that enhance direct contact with the allergen and may take appropriate medication. Thus, patients may take control of the disease, achieving a better quality of life. However, some people were not satisfied with the pollen information and services provided by the NPHC, which might be the reason for their strong, persistent and long-lasting symptoms during the pollen season in spite of the fact that they follow the pollen information and the advice of the experts.

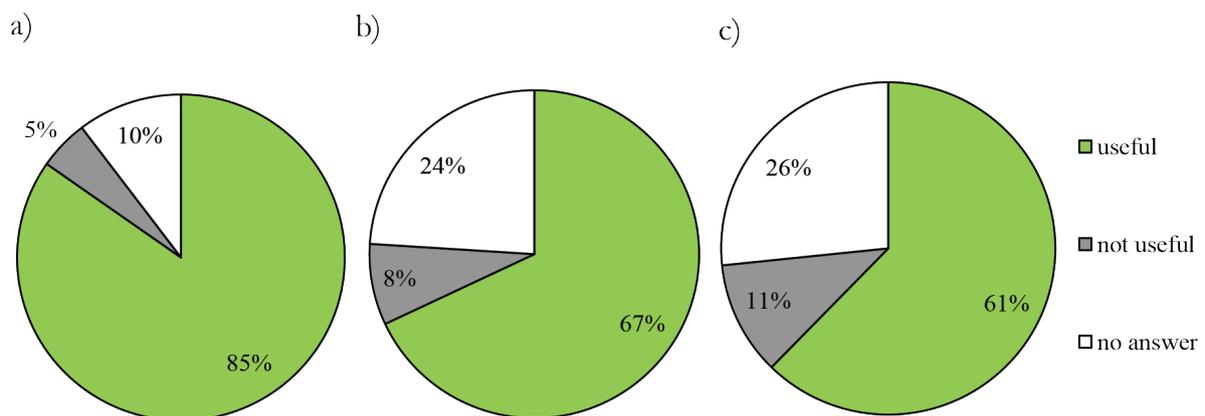


Figure 3. Satisfaction of people who reported ragweed pollen allergy and followed the information and services provided by NPHC on the pollen concentration forecast (a); advice of experts (b), and other pollen-related materials (c) (203 people).

People following the pollen information provided by the NPHC reported that the main purpose of their interest was that they (89%) wanted to know the pollen concentration forecast for the next days (Figure 4). Approximately 45% of them used the pollen information to plan their outdoor activities and trips. Many people (37%) used the information to plan their medication. Similar results were published in another questionnaire-based survey carried out in Australia with 122 participants (Medek et al., 2018).

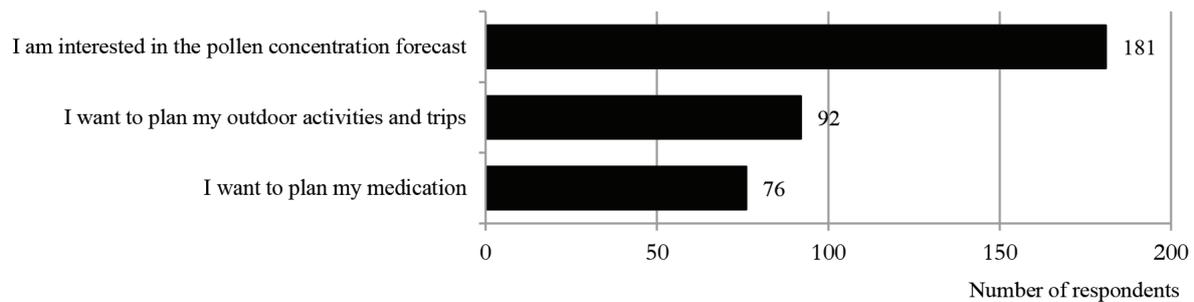


Figure 4. The purpose of following the pollen information among people who were informed by NPHC (203 people).

The NPHC is planning to broaden its services regarding pollen information in the pollen season of 2019. A mobile phone application providing pollen concentration and personalized pollen-related symptom forecasts for ragweed will be launched. Thus, we asked the people about the need for this kind of service. Approximately 79% of the people with ragweed pollen allergy indicated that a mobile phone application which provides personalized symptom forecast would be a useful tool. Some people (8%) did not provide any answers, while others (13%) thought that this kind of application would not be useful for them. The highest interest rate (89%) was obtained for people in their thirties, while the lowest one (72%) was registered for the younger generations (people less than 30 years old). The response rate was low in the case of older people (over 60 years of age) for this question compared to other age groups. The results indicate that education plays an important role and the younger generation must be better informed. The low response rate by the older generation can be explained by the fact that most of them were not familiar with mobile phone applications. Apparently, a wide range of information channels are required in order to reach as many citizens as possible (Karatzas et al., 2013). There is a trend towards the pollen information disseminated by social media, showing a high correlation between pollen counts and users' symptom reports (Gesualdo et al., 2015).

Limitations and recommendations

It should be noted that the questionnaire survey is not representative for the whole country as mainly families with children visited the event and filled the questionnaire in. The "How often do you look at pollen information?" question was not included in the questionnaire, thus we do not have information about an important parameter, the frequency of looking at pollen information. However, it is clear that the feedback from the people with allergy is important to improve

the quality of the services of the institutions responsible for providing pollen information. Thus, it is recommended to conduct questionnaire surveys each year or at least after those periods when changes had been implemented. Based on the results of this survey, it is clear that allergic people usually follow pollen information; however, many of them do not check the source of information. The main source of pollen information is the NPHC in Hungary, thus it is not an important issue; however, it might be a problem in other countries where information is provided from several unreliable sources. The role of institutions responsible for pollen monitoring and communication is high as the pollen information has a significant effect on the health of people.

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REFERENCES

- BASTL, K., BERGER, M., BERGMANN, K.C., et al. (2017). The medical and scientific responsibility of pollen information services. *Wien Klin Wochenschr* 129 (1-2): 70-74.
- CSÉPE, Z., MAKRA, L., VOUKANTSIS, D., et al. (2014). Predicting daily ragweed pollen concentrations using Computational Intelligence techniques over two heavily polluted areas in Europe. *Sci Total Environ* 476-477: 542-52.
- GESUALDO, F., STILO, G., D'AMBROSIO, A., et al. (2015). Can Twitter be a source of information on allergy? Correlation of pollen counts with tweets reporting symptoms of allergic rhinoconjunctivitis and names of antihistamine drugs. *PloS one*, 10(7): e0133706.
- KARATZAS, K.D., RIGA, M., and SMITH, M. (2013). Presentation and Dissemination of Pollen Information. In: M. Sofiev, and KC Bergmann, eds. *Allergenic Pollen*. Springer, Dordrecht, pp. 217-147.
- KIOTSERIDIS, H., CILIO, C.M., BJERMER, L., et al. (2013). Grass pollen allergy in children and adolescents-symptoms, health related quality of life and the value of pollen prognosis. *Clin Transl Allergy* 3: 19.
- KMENTA, M, BASTL, K, JÄGER, S, and BERGER, U. (2014). Development of personal pollen information – the next generation of pollen information and a step forward for hay fever sufferers. *Int J Biometeorol* 58 (8): 1721–6.
- KMENTA, M., ZETTER, R., BERGER, U., and BASTL, K. (2016). Pollen information consumption as an indicator of pollen allergy burden. *Wiener klinische Wochenschrift*, 128(1-2): 59-67.

MEDEK, D., SIMUNOVIC, M., ERBAS, B., et al. (2018). Enabling self-management: results of the AusPollen pre-season questionnaire evaluating Australia's first national airborne pollen monitoring app. Abstract Book of the 11th International Congress on Aerobiology, S0.56 p.62.

PRANK, M., CHAPMAN, D.S., BULLOCK, J.M., et al. (2013). An operational model for forecasting ragweed pollen release and dispersion in Europe. *Agric For Meteorol* 182: 43–53.

VÖRÖS K., BOBVOS J., VARRÓ M.J., et al. (2018). Impacts of long-term ragweed pollen load and other potential risk factors on ragweed pollen allergy among schoolchildren in Hungary. *Ann Agric Environ Med*. 2018, doi: 10.26444/aaem/82624,