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To cite this article: Gennaro Liccardi, Antonello Salzillo, Luigino Calzetta, Amedeo Piccolo & Paola Rogliani (2016) Assessment of pet exposure by questionnaires in epidemiological studies (but also in clinical practice!): Why the questions should be simplified?, Journal of Asthma, 53:9, 879-881, DOI: [10.3109/02770903.2016.1174260](https://doi.org/10.3109/02770903.2016.1174260)

To link to this article: <https://doi.org/10.3109/02770903.2016.1174260>



Accepted author version posted online: 23 Jun 2016.
Published online: 11 Jul 2016.



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LETTER TO THE EDITOR

Assessment of pet exposure by questionnaires in epidemiological studies (but also in clinical practice!): Why the questions should be simplified?Gennaro Liccardi, MD^{1,2}, Antonello Salzillo, MD¹, Luigino Calzetta, PhD^{2,3}, Amedeo Piccolo, MD¹, and Paola Rogliani, MD^{2,3}

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Editor:

We read with interest the article of Apfelbacher et al. [1] showing that self-reported questionnaires administered to assess pet exposure may be highly variable, and consequently they may induce misinterpretation in epidemiological studies.

It is very relevant that this topic has been underlined since the results of epidemiological studies on the relationship between early exposure to pets and development of allergic sensitization/asthma are very controversial, with some authors reporting for enhancer effect and others for "protective" or even no significant effect. Even in clinical practice the query "Are there animals at home?" is common and usually done by physicians and pulmonologists/allergologists when collecting anamnestic data. We believe that an accurate medical history on pet exposure is essential also in clinical practice for an objective evaluation of the risk, the clinical importance of the skin-prick-test positivity to pet (cat/dog) allergens, as well as for the management of sensitized patients (pet-avoidance measures, allergen immunotherapy, pharmacological treatment of respiratory symptoms, etc.).

It is important to underlie that, from a general point of view and particularly in individuals suffering from obstructive respiratory diseases, in the last few years many authors have questioned whether the type of patient enrolled in clinical trials is representative of patients observed in "real life" [2–5]. In fact, patients enrolled in clinical trials must fall into specific inclusion criteria, but this ideal type of patient is not comparable to that then is seen in "real life" by the physician [2–5]. For this reason, we wish to submit some considerations/integrations to the article of Apfelbacher et al., in order to simplify the questions to administer either in the course of epidemiological studies and in routine clinical activities.

First, it has been established that the simple question concerning the presence of one (or more) pet at home, as usually done, should not be considered the main index of exposure to pet allergens and, consequently, the main indicator of risk factor for allergic sensitization. Dynamic indoors distribution of the main pet allergens is complex and depending by production, aero-dispersion, sedimentation and passive transport through clothes and other items. These variables may determine a diffuse presence of pet allergens (indirect exposure) also in indoor environments without pets [6,7]. The higher the frequency of pet ownership in a given community, the higher will be the degree of pet allergen contamination of pet-free private homes.

Although the majority of items used for assessing the pet exposure in Table 1 can be shared, an important question has been not asked by the authors. In our opinion the cases in which pets are no longer present for a long time (e.g., voluntary removal or re-location, natural death etc.) should be absolutely assessed. In fact, it has been shown that pet allergens might still be present in valuable amounts in indoor environments also for many years after pet removal. Chan-Yeung et al. [8] reported the presence of allergic sensitization to cat allergens in patients living on the island of Tristan da Cunha where cats were exterminated about 25 years before.

This is due either to the persistence of the allergen after the removal of the animal or to the allergen being brought in on visitors' clothing [8]. Therefore, in these conditions, the presence of pet at home is considered "formally negative" in the questionnaires, although the level of exposure (direct/indirect) to pet allergens could be outstanding. The number of animals living indoors and the permission to enter into bedrooms are not primary risks if we consider that cat allergens become easily airborne and, consequently, they are distributed indoor through spontaneous ventilation. Considering this background, we suggest a new, more realistic classification of the possible modalities of exposure to pet allergens to formulate some basic questions (Figure 1) [9–11].

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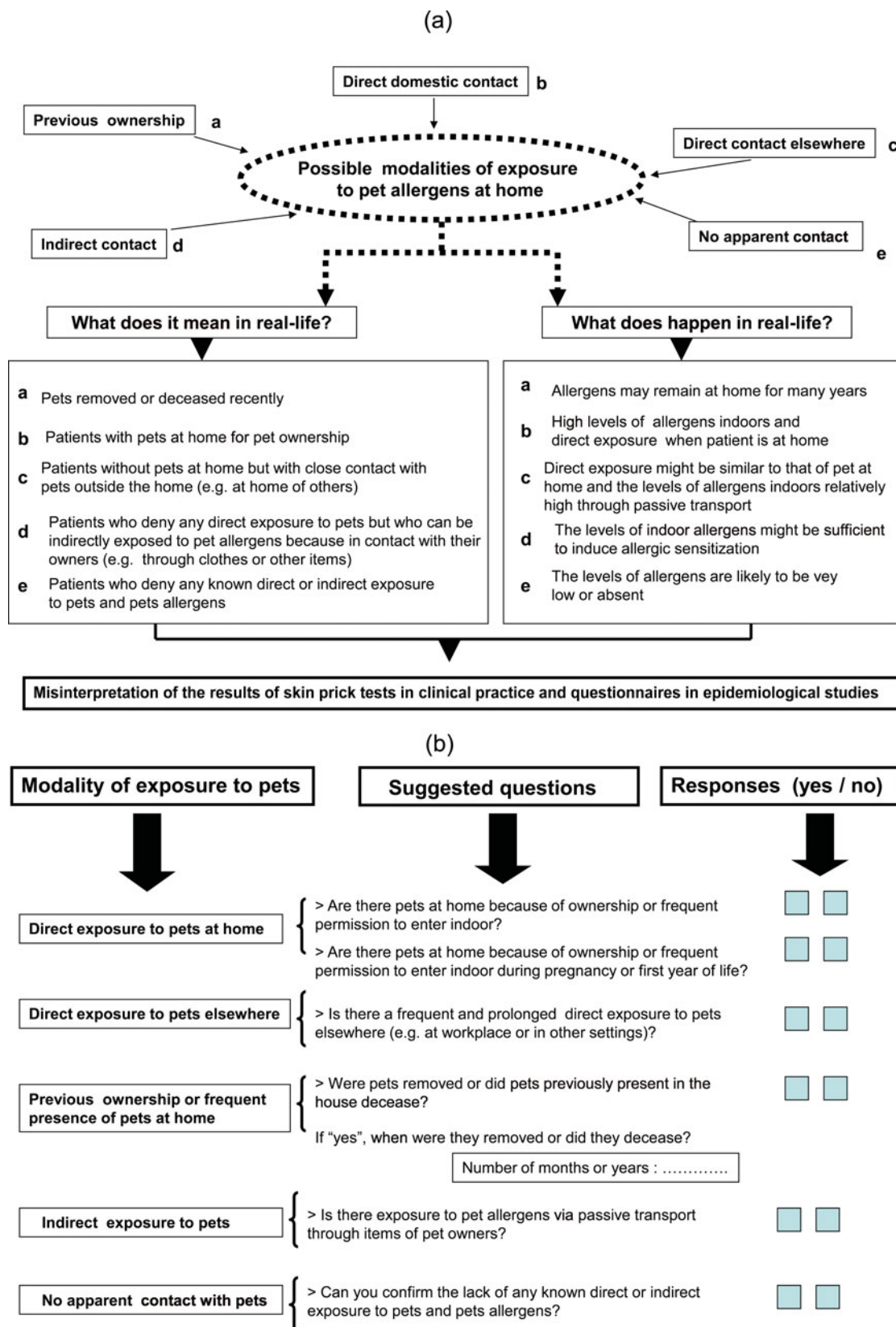


Figure 1. (a) Suggested modalities of exposure to pet allergens at home and possible consequences in real-life. Modified from Liccardi et al. *Eur Annals Allergy Clin Immunol* 2016;48:61–64 (ref. [9]). (b) Suggested items to assess pet exposure in epidemiological studies and in clinical practice.

Figure 1 clearly shows that only the condition (b) is usually reported in the questionnaires used in epidemiological studies or asked in clinical practice. In the conditions (a, c and d) the presence of pet at home is considered “formally negative,” although the level of exposure (direct/indirect) to pet allergens

may be considerable. Only the condition (e) should be considered at the lower risk of pet allergen exposure after having certainly excluded any direct and indirect contact.

We have used this classification of exposure for both common pets and for large animal, such as horses with some

specific modifications. In these studies, we have shown the role of these different modalities of exposure on the prevalence of allergic sensitization to several furry animals [12–14]. In conclusion, the article of Apfelbacher et al. has the merit of emphasizing the unsuitability of currently used self-reported questionnaires to assess exposure to pets. However, we believe that items suggested by authors to assess pet exposure are too many and could be reduced to a few well-defined questions, including that on previous presence of pets at home. Finally, it is important to use the same questions also in clinical practice for a more appropriate management of pet-sensitized patients.

Declaration of interest

All authors declare that they have no conflict of interest and that the study has been carried out without any financial support. The authors alone are responsible for the content and writing of the article.

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