

HUMAN ALLERGY TO CATS

A review of the impact on cat ownership and relinquishment

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Introduction

It is estimated that globally around 10–20% of human adults are allergic to cats (a figure that has been increasing), that cat allergy among humans is second only to house dust mite as a cause of indoor respiratory allergy, and that around 20–30% of patients with respiratory allergy are allergic to cats.^{1–8} Although the severity of symptoms varies widely, the rising prevalence of this condition is a significant human health problem and in many individuals the disease can be serious and debilitating.

Eight different feline allergens have been classified (Fel d 1 to Fel d 8), and others are also known to exist.^{1,2} However, reactivity to Fel d 1 is recognised as by far the most important component. More than 80%, and typically 90–96%, of individuals allergic to cats are known to respond to Fel d 1, and it is estimated that Fel d 1 is responsible for between 60% and 90% of the total reactivity seen in allergic individuals.^{1,2,9}

While much work has been carried out on characterising the nature of human allergy to cats, controlling clinical symptoms in individuals remains complex and problematic. A multimodal approach to management is usually recommended, and avoidance of cats or minimising contact with them routinely forms a major part of the strategy.² However, the impact of such advice on both cat owners and potential owners, and on the human–cat bond, is perhaps rarely considered in depth.

The aim of this paper was to find objective information on the impact of human allergy to cats on the human–cat bond by reviewing the available published data on how human allergy affects cat ownership (decisions on whether to own a cat or to relinquish ownership of a cat), and to consider the implications of the findings on the wider human–cat bond and how adverse effects can be minimised. Online databases (PubMed MEDLINE, CABI VetMed Resource, Google Scholar) were searched for keywords including ‘cats’, ‘allergy’, ‘allergies’, ‘ownership’, ‘surrender’ and



Practical relevance: Cats have become increasingly common as companion animals, and in many countries their popularity now exceeds that of dogs. At the same time, human allergies (including allergy to cats) have been increasing and it has been estimated that globally up to 10–20% of human adults are sensitised to cats.

Aim: This review summarises the available published data on how human allergy to cats affects cat ownership and considers the implications of the findings on the wider human–cat bond and how adverse effects can be minimised.

Evidence base: Online databases were searched for all original studies up to December 2020 that had quantified the impact of human allergy to cats on ownership or relinquishment. Objective quantifiable data appeared to fall into three broad outcomes – (1) choosing to avoid cat ownership; (2) relinquishment of owned cats; and (3) return of cats after acquisition from a rehoming centre. The data retrieved on these topics are the focus of this review. In some studies, data from cats and dogs were combined and these have also been included in the review.

Keywords: Allergy; human; relinquishment; ownership

COMPANION ARTICLE

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‘relinquishment’ to find all original studies up to December 2020 that had quantified the impact of human allergy to cats on ownership or relinquishment. Objective quantifiable data appeared to fall into three broad outcomes – (1) choosing to avoid cat ownership; (2) relinquishment of owned cats; and (3) return of cats after acquisition from a rehoming centre. The data retrieved on these topics are the focus of this review. In some studies, data from cats and dogs were combined and these have also been included in the review.

Human–animal bond and cat ownership

Although largely beyond the scope of this review, it is worth briefly stating that in many countries, cats have now become more popular than dogs as household pets. A 2008 survey by the World Society for the Protection of Animals (WSPA) compared estimated owned pet dog and cat populations in 79 countries worldwide and found that in 26 (33%) the cat population was higher than the dog population.¹⁰ The data from WSPA also suggested that cat populations globally were growing at a faster rate than dog populations.¹⁰ Similarly, a Growth from Knowledge Survey published in 2016 found that in 8/22 (36%) countries surveyed, there were a higher number of cat-owning households than dog-owning households.¹¹

Where studied, the occurrence of allergies in humans in the household appears to be an important reason people choose not to own pets.



Most studies suggest that the primary reasons both cats and dogs are kept as pets is for companionship and affection,^{12–17} with a large proportion of cat and dog owners (typically 70–90% or more) regarding their pet as a family member and exhibiting a strong human–animal bond.^{12,16,18–24} Although not always the case, many studies have also found positive associations between pet ownership and improved physical and mental health in owners,^{16,19,20,25–33} with evidence that a greater attachment to a cat may lead to greater health benefits.³⁴

Reasons for avoiding cat ownership

While many studies have been published that compare socioeconomic and other differences between pet owners and non-pet owners, few have explored specifically the reasons people choose not to own pets. However, where this has been studied, the occurrence of allergies in humans in the household appears to be an important factor.

The results of three studies are summarised in Table 1. In one study from the USA that included 668 people over 50 years of age who had not owned a dog or a cat for at least 12 months, allergies within household members was cited as a reason for avoiding ownership by 6% and was the fourth most common specific reason given.¹² A survey of 700 Canadian

Table 1 Reasons for avoiding cat (or cat and dog) ownership

Study	Study overview	Number of people in study	Proportion citing allergy as a reason	Other, more common reasons cited	Other, equally or less common reasons cited (not necessarily all listed)
Leslie et al (1994) ¹³	Reasons for not owning either a cat or a dog, Canada	~160	36%	<ul style="list-style-type: none"> ❖ Problems when I go away (82%) ❖ Not enough time (64%) ❖ Inappropriate housing (53%) ❖ Location is dangerous (52%) 	<ul style="list-style-type: none"> ❖ Too expensive (35%) ❖ Pets not allowed (34%) ❖ Health risks (33%) ❖ Dislike pets (24%) ❖ Pets should not be owned (16%) ❖ Health problems (14%)
American Humane Association (2012) ³⁵	Reasons for never owning a cat, USA	500	18%	<ul style="list-style-type: none"> ❖ Do not like cats (35%) ❖ Litter box smell (29%) ❖ Inappropriate lifestyle (22%) 	<ul style="list-style-type: none"> ❖ Veterinary expenses (18%) ❖ General expenses (17%) ❖ Not enough time (16%) ❖ Damage caused by cats (12%) ❖ Problems with travel (11%) ❖ Not allowed cats (10%)
American Humane Association (2012) ³⁵	Reason for not owning a cat for ≥12 months, USA	500	16%	<ul style="list-style-type: none"> ❖ Problems when I travel (28%) ❖ Cleaning up after the cat (25%) ❖ Veterinary expenses (24%) ❖ General expenses (24%) ❖ Lack of time (21%) ❖ Grieving after pet loss (17%) 	<ul style="list-style-type: none"> ❖ Do not like cats (12%) ❖ Not allowed to have cats (12%) ❖ Still looking for a new cat (11%) ❖ No time to find a new cat (11%) ❖ Damage caused by cats (11%)
Bibbo et al (2019) ¹²	Reasons for not owning either a cat or a dog for ≥12 months, USA	668	6%	<ul style="list-style-type: none"> ❖ Insufficient time (32%) ❖ Not interested (17%) ❖ Too expensive (7%) 	<ul style="list-style-type: none"> ❖ Health risks (2%)

households included around 160 respondents who did not own a pet,¹³ and these people were asked to rank the importance of 11 possible reasons for not owning a pet. Of those who responded to the question, 36% (34/95) said allergy problems in the family were an important (15/95, 16%) or very important (19/95, 20%) reason, and this ranked fifth among the 11 options available. However, in neither of these two studies were reasons for not owning a dog or a cat looked at separately.

In a more detailed study from the USA published by the American Humane Association (AHA) in 2012, 500 people who had never owned a dog or cat as an adult (non-pet owners) were surveyed, along with 500 previous cat owners and 500 previous dog owners who had not owned a pet within the past 12 months.³⁵ Of people who had never owned a pet, allergy was the joint fourth (together with veterinary expenses) most common reason given for not owning a cat (each cited by 18%), but was only cited by 8% of people as a reason for not owning a dog. Among people who had previously owned cats, allergy was the seventh most common reason and was cited by 16%, but again was a reason cited by fewer (only 5%) previous dog owners.³⁵

Reasons for cat relinquishment to rehoming organisations

Another objective way of assessing the impact of human allergy to cats is to look at cat relinquishment to rehoming organisations (animal shelters and similar facilities). A number of studies have explored the reasons for cat (or dog and cat) relinquishment to rehoming organisations, and the results of these are summarised in Table 2.

Perhaps contrary to common perceptions, studies suggest that for most owned pets relinquished to rehoming organisations, the relationship with the owner was close and the decision to relinquish was typically difficult and traumatic.^{37,44,45} The reasons for cat relinquishment can also be broadly divided into cat-related issues such as behavioural problems or sickness, and owner-related issues such as housing problems, moving house, personal problems, economic reasons and health issues including allergies.^{38,46}

Studies from the USA

In 1998, Salman et al collated data on pet relinquishment to 12 rehoming centres collected through the National Council of Pet Population Study and Policy (NCPSP) regional shelter survey during 1995 and 1996.³⁸ Data were reported from 3772 owners who had relinquished a total of 3676 dogs and

1409 cats, with owners being able to provide up to five reasons for relinquishment of the pet. Seventy-one different reasons were provided by owners for relinquishment, and 'allergies' was the second most common specific reason given for cat relinquishment (reported in 262/1409, 19% of relinquishments), after 'too many cats in the house' (reported in 25% of cases); in addition, a number of different problem behaviours were given as reasons for cat relinquishment, collectively cited in 33% of cases. In comparison, allergies were reported as a reason for relinquishment by only 2% of dog owners. In a more detailed analysis of the data that excluded litters of kittens that had been surrendered, Scarlett et al⁴⁷ (not shown in Table 2) reported that, of 1361 cats relinquished, allergies within the family were cited as a reason in 18% (246) of cases (significantly higher than the 4% reported for dogs).

Similarly, in a smaller study of 74 cat owners and 56 dog owners who relinquished their pets to the Capital Area Humane Society,³⁶ owner health issues (and 'especially allergies') were the second most common primary reason for relinquishment of cats (15% of owners) after moving house (29% of owners).

During interviews with 38 owners who relinquished a total of 27 pet dogs and 26 pet cats to a private shelter in a suburb of Boston (USA),³⁷ allergies and moving house were both cited by seven owners (18% each) as important reasons for relinquishment, second only to behavioural problems (cited by 12 [32%] owners). Most examples relating to allergies involved relinquishment of cats, although the authors did not provide a numerical breakdown of the cats and dogs relinquished for this reason.³⁷

A cross-sectional national telephone survey of pet owners who had rehomed dogs or cats in the previous 5 years was conducted by the American Society for the Prevention of Cruelty to Animals.³⁹ This survey included owners who had rehomed pets to family, friends or places in addition to rehoming centres, and included 391 dog rehoming and 199 cat rehoming. Although full details of differences between the relinquishment of dogs and cats were not provided, allergies were the fifth most common primary reason owners surrendered their animals, being cited by 6%.



Studies suggest that for most owned pets relinquished to rehoming organisations, the relationship with the owner was close and the decision to relinquish was difficult and traumatic.

Table 2 Reasons for relinquishing a pet cat (or pet cat or dog)

Study	Study overview	Number of people in study	Proportion citing allergy as a reason	Other, more common reasons cited	Other, equally or less common reasons cited (not necessarily all listed)
Miller et al (1996) ³⁶	Main reasons owners relinquished cats to a Humane Society in Ohio, USA	74	15%*	<ul style="list-style-type: none"> ✦ Moving house (29%) 	<ul style="list-style-type: none"> ✦ Behavioural problems (14%) ✦ Litter box problems (13%) ✦ Time and cost (13%) ✦ Cat's health (5%)
DiGiacomo et al (1998) ³⁷	Main reasons for relinquishment of cats (n = 26) or dogs (n = 27) to a shelter in Boston, USA	38	18%	<ul style="list-style-type: none"> ✦ Behavioural problems (32%) 	<ul style="list-style-type: none"> ✦ Moving (18%) ✦ Not allowed to have a cat (8%) ✦ Too many pets (8%) ✦ Unable to provide care (8%)
Salman et al (1998) ³⁸	NCPSP survey of relinquished cats at 12 centres, USA	1409	19%	<ul style="list-style-type: none"> ✦ Behavioural problems (33%) ✦ Too many cats in house (25%) 	<ul style="list-style-type: none"> ✦ Moving house (18%) ✦ Cost (15%) ✦ Housing problems (14%) ✦ Unable to home a litter (13%) ✦ Cat's health (6%)
American Humane Association (2012) ³⁵	Reasons for rehoming or surrendering a pet cat, USA	105	11%	<ul style="list-style-type: none"> ✦ Not allowed to have a cat (21%) 	<ul style="list-style-type: none"> ✦ Death/divorce in family (8%) ✦ Behavioural issues (8%) ✦ Cat's health (7%)
Weiss et al (2015) ³⁹	Telephone survey following up on cats (n = 199) or dogs (n = 391) rehomed to family, friends, shelters and other places, USA	590	6%	<ul style="list-style-type: none"> ✦ Pet-related problems (46%) ✦ Housing problems (18%) ✦ Family health issues (12%) ✦ Other family problems (7%) 	<ul style="list-style-type: none"> ✦ Cost issues (5%) ✦ Other problems (3%)
Alberthsen et al (2016) ⁴⁰	Reasons for relinquishment of owned cats to 39 RSPCA shelters, Australia	49,393	3%	<ul style="list-style-type: none"> ✦ Accommodation-related (19%) ✦ Too many animals (17%) ✦ From own litter (15%) ✦ Unwanted (12%) ✦ Too expensive (10%) ✦ Unable to provide care (6%) ✦ Abandoned (4%) ✦ Behavioural problems (4%) 	<ul style="list-style-type: none"> ✦ Cat's health (2%) ✦ Legal problems (2%) ✦ Relationship problems (1%)
Zito et al (2016) ⁴¹	Cats surrendered to three RSPCA shelters, Australia	55	18%	<ul style="list-style-type: none"> ✦ Accommodation-related (57%) ✦ Other personal reasons (50%) ✦ Financial reasons (29%) ✦ Unwanted kittens (25%) ✦ Behaviour (25%) 	<ul style="list-style-type: none"> ✦ Human health (12%) ✦ Risks to baby/child (10%) ✦ Cat's health (8%)
Hazel et al (2018) ⁴²	Online rehoming of cats in Australia	7	14%	<ul style="list-style-type: none"> ✦ Not getting on with other pets (43%) ✦ Moving (29%) 	<ul style="list-style-type: none"> ✦ Expecting a baby (14%) ✦ Too many pets (14%) ✦ Not enough time (14%) ✦ Rescue (14%)
Casey et al (2009) ⁴³	Cats surrendered to 11 Cats Protection centres, UK	6089	5%	<ul style="list-style-type: none"> ✦ Stray/abandoned (31%) ✦ Owner circumstances (19%) ✦ Unwanted kittens (14%) ✦ Transfer from other shelter (9%) ✦ Behavioural problems (7%) 	<ul style="list-style-type: none"> ✦ Multiple factors (5%) ✦ No reason (3%) ✦ Pregnancy/young child (2%) ✦ Too many cats (2%) ✦ Cat's health (1%)

NCPSP = National Council of Pet Population Study and Policy; RSPCA = Royal Society for the Prevention of Cruelty to Animals
 *Study showed 15% reported owner health issues, 'especially allergies'

In the American Humane Association survey of dog and cat ownership,³⁵ reasons for surrendering (returning, giving away or selling) a pet among 94 previous dog owners and 105 previous cat owners were explored. The most common reason given for relinquishing a cat or a dog was that the housing did not allow pets to be kept (21% and 29%, respectively). However, for cats, the second most common reason was allergy to the cat (11%), which was only given as a reason by 2% of dog owners.

Studies from Australasia

A large study explored the reasons for relinquishment of 61,755 owned cats to 39 Australian RSPCA (Royal Society for the Prevention of Cruelty to Animals) and RSPCA-related shelters using a standardised database.⁴⁰ Data between 2006 and 2010 were analysed and a reason for surrender was provided for 49,393 submissions. Allergy was the reason cited in 1521 cases (3%), almost as frequent as all behaviour-related reasons combined (cited in 1834 cases, 4%).

A smaller study from Australia looked at the online rehoming of dogs and cats through a popular internet site (Gumtree).⁴² This study included interviews with seven cat owners, and allergy was cited as a reason for rehoming by one owner (14%).

In a study of cats surrendered to three Australian RSPCA shelters in Sydney, Melbourne and Brisbane during 2012,⁴¹ 140 people who had surrendered a total of 177 cats (24 surrendering more than one cat) were interviewed using a standardised questionnaire. Of the 177 cats, 122 were considered unowned and 55 owned. Cat allergies were appreciably more likely to contribute to the decision to relinquish an owned (9/50, 18%) than an unowned (3/74, 4%) cat.

Studies from Europe

A study from the UK looked at data from 11 Cats Protection rehoming centres.⁴³ During 2001, owners relinquishing cats to these centres were asked to fill in a standardised form including a ‘free answer’ section on their reasons for relinquishment. Records were available for 6089 cats and, of these, 280 owners (5%) reported allergy or asthma as a reason. For 1920 cats, the people relinquishing them reported that they were stray or abandoned cats and a further 569 cats were reported to be transferred from other facilities; if these 2489 cats are excluded from the analysis, the 280 owners who reported allergy or asthma as a

Many studies suggest that allergy to cats is more common and more severe than allergy to dogs.



reason would have represented 8% of the remainder.

In a study from Sweden⁴⁸ (not shown in Table 2), a total of 47 cat shelters responded to a questionnaire regarding cat relinquishment. Collectively the shelters reported an intake of approximately 5600 cats per year. The shelters reported homelessness (66%) and allergy (27%) as the two most common reasons for relinquishment, although details for individual cats and owners were not available so these data are not comparable with the other studies. Other, less common reasons cited included moving house, illness or death of an owner, age of an owner, lack of time, and a change in the family situation.

Reasons for failure of cat rehoming

A few studies have also been published looking at the outcome for cats that have been rehomed from centres to new owners, and identifying reasons for any failures (Table 3).

In the UK study of Cats Protection rehoming centres,⁴³ 166 cats were identified that were known to have been returned to a centre from which they were homed. Allergies or asthma was the reason in 18% of cases and was the third most common factor after behavioural problems and changes in owner circumstances.

In the USA, a study was conducted of 78 owners who returned a total of 82 dogs and

Table 3 Reasons for failure of cat (or cat and dog) rehoming

Study	Study overview	Number of people in study	Proportion citing allergy as a reason	Other, more common reasons cited	Other, equally or less common reasons cited (not necessarily all listed)
Neidhart and Boyd (2002) ²⁴	Failure of cat adoptions from two shelters and two adoption campaigns, USA	42	10%	<ul style="list-style-type: none"> ❖ Cat had died (36%) ❖ Cat ran away (17%) 	<ul style="list-style-type: none"> ❖ Behavioural problems (10%) ❖ Cat's health (7%) ❖ Problems with other pets (5%)
Shore (2005) ⁴⁹	Reasons for returning a cat or dog to a Midwestern rehoming centre, USA	78	10%*	<ul style="list-style-type: none"> ❖ Problems with other pets (14%) ❖ Problems with children (14%) ❖ Other behavioural problems (12%) 	<ul style="list-style-type: none"> ❖ Elimination problems (10%) ❖ Pet's illness (9%) ❖ Pet escaping (9%)
DiGangi et al (2006) ⁵⁰	Reasons rehoming failed in cats from a research programme, USA	18	17%	<ul style="list-style-type: none"> ❖ Problems with other pets (22%) 	<ul style="list-style-type: none"> ❖ Inappropriate urination (17%)
Hawes et al (2020) ⁵¹	Reasons for returning cats to a rehoming centre in Texas, USA	72	8%	<ul style="list-style-type: none"> ❖ Moving house (19%) ❖ Aggression to humans (13%) ❖ Destructive tendencies (11%) ❖ Could not afford care (11%) ❖ Adopter's medical needs (11%) ❖ Aggression to animals (10%) 	<ul style="list-style-type: none"> ❖ Medical reasons (6%) ❖ Resident pet behaviour (4%) ❖ Medical needs of cat (1%) ❖ Separation anxiety (1%) ❖ Death in family (1%)
Casey et al (2009) ⁴³	Cats returned to 11 Cats Protection centres after being homed, UK	166	18%	<ul style="list-style-type: none"> ❖ Behavioural problems (38%) ❖ Owner circumstances (23%) 	<ul style="list-style-type: none"> ❖ Stray/abandoned (5%) ❖ Multiple factors (4%) ❖ Pregnancy/young child (4%)

*Reason provided was ‘Human allergies, human illness’ and the two were not separated

18 cats to a humane shelter in a Midwestern city.⁴⁹ Human allergies or illness was identified as the fourth most common reason for the return of animals, and a reason in 10% of cases. In all cases, owners reported they had previously been unaware of the allergy, but the specific breakdown of the numbers allergic to cats and dogs was not provided.

In another study from the USA, owners who adopted dogs or cats from two shelters or two adoption campaigns were surveyed.²⁴ One year after adoption, 20% of owners were reported to no longer have their adopted pet. An allergic reaction to the cat (reported by 10% of owners) was the third most common reason for no longer having the cat (after death of the cat, or the cat running away). By contrast, development of an allergy was the reason for only 2% of 53 dogs no longer being with adopters.

Similarly, a recent study evaluating an animal shelter in Texas, USA, documented human allergy to the cat as the reason for return to the shelter of over 8% of 72 cats after rehoming over a 3-month investigation period.⁵¹

In one other study, the success of adopting cats from a biomedical research programme at the University of Florida, USA, was investigated.⁵⁰ Over a 6-year period, 458 cats were adopted, and responses to a survey were received for 275 of the adopted cats. The survey was conducted a median of 3 years after adoption (range 1–75 months) and at that time 251 cats (91%) were still in their adopted homes, six (2%) had died and 18 (7%) were failed adoptions. Of the 18 failed adoptions, the main reasons given were failure to get along with other pets (4/18, 22%), development of allergies by the owner (3/18, 17%) and inappropriate urination (3/18, 17%).

Discussion and conclusions

Although none of the studies identified in the literature search and summarised above had been designed to specifically assess the importance of human allergies to cats, all reported this to be an important factor in decisions to avoid ownership of a cat, or to relinquish an owned pet cat. Indeed, in many of the studies on relinquishment, allergies in household members featured in the top three to five reasons for surrender. Despite the broad consistency in the results of the different studies reviewed, these data cannot be directly compared with each other as not only were

different populations looked at from different geographies, but the methods used to collect data varied in each study and the accuracy of reporting allergy to cats and dogs will also undoubtedly have varied. Reporting bias may well have been introduced by the way questions were phrased or the way questionnaires were designed, and in most cases such details were lacking. Nevertheless, given the apparent importance of allergy to pets shown by these studies, collecting more detailed and robust information in the future to explore this further would be highly valuable. Additionally, studies published in languages other than English are likely to have been overlooked in this review.

Although relatively few studies were found that specifically explored reasons why people chose not to own cats (or cats and dogs), the studies identified all cited allergy as a common reason. These data are consistent with the high prevalence of allergy being cited as a reason for relinquishment and the high prevalence of allergy to cats (and dogs) in the population. What is not clear is whether better control of allergies (eg, through improved allergen avoidance) would result in more people choosing to own a cat (or dog) who otherwise would not.

As in the studies on pet relinquishment, where studies specifically differentiated between cat and dog ownership, allergies to cats were invariably cited more commonly as a reason to avoid ownership than allergies to dogs. Although accurate data on the relative prevalence of human allergies to dogs and cats are lacking, in part because of the greater challenges in accurately diagnosing allergies to dogs,² these findings are consistent with many studies that suggest allergy to cats is more common and more severe than allergy to dogs.^{1,3,4,6,7,52–61} Indeed the Asthma and Allergy Foundation of America suggests that cat allergy is about twice as common as dog allergy.⁶² This may not necessarily be because a higher proportion of people are sensitised to cats, but may reflect differences in the physico-chemical properties of the allergens in the environment, the grooming behaviour of cats (saliva being a major source of environmental Fel d 1) and perhaps differences in immunological responses to the allergens.^{61,63,64}

As can be seen, allergy to cats was given as a reason for relinquishment of a pet cat, or the return of a cat to a homing centre, in around



Some methods to reduce allergen exposure (vacuum cleaning, air filters, mattress covers) may have little or no impact on the human–cat bond, while others (such as avoiding contact with the cat and washing the cat frequently) may cause stress, for both owner and cat.

5–15% of cases. This emphasises the potential impact of cat allergy on the human–cat bond as decisions to relinquish pets are rarely made lightly,^{37,44,45} and may be very difficult for the owner.

It is possible that the frequency of allergy as a reason for relinquishing pet cats in the studies reviewed (Table 2) might overestimate the true importance – as a result of inaccurate diagnosis of allergy or perhaps over-reporting by owners. However, the reports are consistent with the high prevalence of cat allergy in the general population, and it has been suggested that allergy may only uncommonly be used as an excuse (rather than a genuine reason) for relinquishment.⁴³ The frequency with which pet allergy is cited as a reason to avoid pet ownership (Table 1), and as a reason for failure of rehoming (Table 3), is also suggestive of allergies being a genuine reason in most cases of relinquishment. However, additional studies in the future should address specifically any differences between stated and genuine reasons for pet relinquishment, as knowledge of the true reasons for surrender will be important in developing strategies to reduce these numbers.

Importantly, it should also be noted that in many, if not most, cases of cat allergy the owner will choose to continue to live with the cat in the house even if it likely affects their relationship with the cat (Figure 1). Although eliminating cats from the home environment is a common and standard recommendation for allergic individuals,^{2,65} the emotional bond between owners and their cats results in only a minority following this recommendation when made by a healthcare professional.^{63,66–68} For those owners who continue to live with their cat despite the presence of cat allergy, the impact of this on their quality of life and the human–animal bond has not been evaluated⁶⁵ – future studies should explore this area, and how any negative impact might be mitigated.

In addition to drug therapy and/or immunotherapy, other measures often recommended to reduce the symptoms of cat allergy include a variety of ways to minimise allergen (Fel d 1) exposure, including bathing a cat twice weekly, preventing the cat accessing the bedroom, using air purifiers with high-efficiency particulate air (HEPA) filters, using high-efficiency vacuum cleaners, using pillow and mattress covers that avoid trapping small particles, reducing furnishings and carpets, and immunotherapy.^{1,2,65,69–71} Many owners may thus try to reduce the severity of symptoms through a variety of measures, including restricting contact with the cat and restricting



Figure 1 From published data, human allergy to cats appears to be a common cause of cat relinquishment. However, many cat-allergic owners choose to continue to live with their cats despite the impact it may have on the human–cat bond. Image by Annette Meyer from Pixabay

where the cat is allowed. Some of the methods to reduce allergen exposure (vacuum cleaning, air filters, mattress covers) may have little or no impact on the human–cat bond, while others (such as avoiding contact with the cat and washing the cat frequently) may cause stress for both the owner and the cat, with resultant quality of life problems.⁷²

Despite challenges, control measures to reduce environmental Fel d 1 concentrations can be valuable, with one study showing a greater than 93% reduction achieved by a combination of measures (including twice weekly washing of cats and removing carpets and soft furnishings from bedrooms).⁷¹ Other, novel measures that help to reduce the amount of active Fel d 1 shed by a cat may also have an important role to play in managing cat allergies in the future, including methods that are more cat-friendly. The use of a novel experimental vaccine administered to cats to induce neutralising antibodies against Fel d 1 and reduce its secretion is one approach,⁷³ although ethical and practical problems may arise with the clinical use of a vaccine that has no direct benefit for the animal in which it is used. Another recent cat-friendly approach has been the incorporation of chicken egg-derived anti-Fel d 1 IgY antibodies into cat food; this effectively neutralises (renders non-allergenic) Fel d 1 in saliva, which is considered a major source of environmental Fel d 1.^{65,74–76}

Novel approaches to helping control environmental Fel d 1 levels, alongside some established methods, may (together with appropriate drug and immunotherapy) help cat allergy sufferers to better manage their symptoms if they choose to continue to live with their cat. Finding solutions to minimise the risks associated with cat allergy should always involve advice from appropriate healthcare professionals, and individualised protocols may need to be worked out based on risks, lifestyle, environment and practical considerations. However, involvement of the veterinary healthcare team may also have a vital role in contributing to these discussions and in guiding choices and options that may minimise the impact on the human–animal bond and on cat welfare.



Involvement of the veterinary healthcare team in guiding choices and presenting novel options for cat allergy sufferers may help to minimise the impact on the human–animal bond and on cat welfare.

KEY POINTS

- ❖ The human–animal bond associated with cat ownership is frequently very strong, but the occurrence of cat allergies can have important implications.
- ❖ Objective data from published studies suggest that between 5% and 35% of potential owners avoid owning a cat (or dog) due to concerns about allergy, and cat allergy in a household member is an important factor in the decision to relinquish a cat for rehoming in around 5–15% of cases. This is also much more likely to happen with cats than with dogs, consistent with cat allergy being a greater clinical problem than dog allergy.
- ❖ Although cat allergy is an important reason for owners to surrender cats, other studies show the majority of owners are likely to keep the cat despite the occurrence of an allergy. Where a cat continues to live in a house alongside cat-allergic people, professional healthcare advice should be sought, and a variety of measures may be employed to help reduce the severity of symptoms of cat allergy.
- ❖ Some interventions may have a lower impact on the human–cat bond than others, and involvement of the veterinary healthcare team in discussions may help to maintain cat welfare.



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