

ANALYSIS OF THE LEVEL OF WELFARE OF DOMESTIC CATS IN POLAND – SURVEY RESEARCH

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Abstract

The aim of the study was to analyze the factors determining the well-being of cats based on an online survey addressed to owners of pedigree and non-pedigree cats. The factors influencing the welfare of the cat, included in the survey, were feeding and watering, housing conditions, cat care, the way the cat spent time and its health. Most of the responses in the survey showed no dependence on the age, sex or number of cats in the household. Possession of the Cat's Health Book depended on the number of cats in the household, the lack of it was more often declared by the owners of one cat. The analysis of the respondents' answers confirmed that there are still misconceptions among cat owners that may be harmful to the cat, such as, for example, giving raw cow's milk to cats that are lactose intolerant. Relatively low owners' awareness of plants poisonous and harmful to cats (present in 55% of households) was also found. The survey showed a relatively high percentage of cats vaccinated (80%) and 34% of rabies vaccinations performed among outdoor cats. The regularity of vaccinations was significantly dependent on the age of the cat. According to 48% of respondents, outdoor cats were also properly protected against fleas and ticks. Male and older cats were significantly more often under constant veterinary care. Also, older cats were significantly more likely to suffer from viral or bacterial diseases. Cats in most cases had the appropriate body weight, but females often tended to be more obese than males, and it significantly depended only on the age of the cat. The abnormal weight of cats was not significantly affected by castration/spaying or diet. Awareness of cat grooming needs was low, with only around 38% of respondents knowing that their pet had an undercoat. By far, the best care was taken by cat owners to ensure their safety by securing windows, as well as entertainment at home and proper care during the owners' absence.

Keywords: domestic cats, welfare, survey research

Introduction

Cats appeared in human life as early as 9,500 years ago (Pickrell, 2004). Their breeding began in the 19th century, primarily as companion and show animals (Smith, 2017) and is still developing rapidly, which is facilitated by the emergence of new developments in the field of veterinary medicine and genetics. For over 100 years cat breeders have been using kinship mating and line-breeding and, basing on the so-called breed standard, have produced many breeds of cats. Fortunately, for cats, unlike many dog breeds, only a few feline breeds have a genetic defect included in the breed standard as a standard conformation, such as the brachycephalic skull in Persian cats, which causes breathing or feeding difficulties, especially in kittens due to cleft palates. This causes a significant reduction in the welfare conditions of pedigree cats, both breeding and accompanying. Despite the existence of 48 cat breeds, the most popular companion in human life is still a cat without a pedigree, most often a crossbreed of many breeds (Sonntag and Overall, 2014).

Recently, more and more attention has been paid to providing appropriate living conditions for pets, i.e. the so-called welfare. The concept of well-being should be understood as the mental and physical state of an animal, showing how it copes with the surrounding environment. The concept of well-being consists of five freedoms. These are freedom from discomfort, freedom from stress and fear, freedom from thirst and hunger, freedom from pain, disease and wounds, and freedom to express natural behaviors (Łapińska, 2017). It is important to ensure the indicated freedoms in all places where the cat stays, including at home. However, ensuring the well-being of cats in many aspects is still dictated by stereotypical information, passed down from generation to generation of owners, and not necessarily corresponding to the current state of knowledge. This applies, for example, to insufficient knowledge about which plants are harmful and poisonous to companion animals, especially dogs and cats (Severino, 2009). Exploring this topic can help improve the quality of life for cats and prevent the further spread of information that can harm not only the well-being, but also the health of the cat. Monitoring the well-being of cats is based on assessing their quality of life by estimating the level of application of the principles of the five freedoms. Input factors are analyzed, such as the environment, home, bonds, veterinary care or nutrition, and output factors, i.e. the cat's health status, emotional, physiological and behavioral reactions, body condition assessment (Sonntag and Overall, 2014; Stella and Cronney, 2016). Recently, many legal acts regulating the conditions of animal welfare have been created. Article 13 of the Treaty on the Functioning of the European Union states that animals are sentient beings. The Treaty requires animal owners and keepers to treat animals humanely, to provide them with a suitable living environment and nutrition, to express normal patterns of behavior and to maintain or not interactions with other animals and to spare them pain and suffering, injury and disease, and on competent control authorities to monitoring compliance with animal welfare regulations (WSAVA Animal Welfare, 2018). In Poland, the welfare and protection of animals is regulated by the Act of 21 August 1997 on the Protection of Animals, which obliges the citizen, inter alia, to ensure welfare. Issues such as the prohibition of mistreatment, the order of decent treatment and the introduction of the issue of animal protection to the core curriculum of general education are assumed. The Act also stipulates that if leaving an animal with its current guardian may pose a threat to its health or life, the animal may be taken away from them. In Poland, there are also laws imposed by the European Union. Issues regarding animal rights are contained mainly in the aforementioned Article 13 of the Treaty on the Functioning of the EU. The World Organization for Animal Health recommends that veterinarians become the primary advocates for the welfare of all animals. They would be the ones who would promote ethical decisions regarding the living conditions of animals, take actions promoting care for the welfare of animals in homes, kennels, hotels, shelters and veterinary clinics. In addition, there are many

non-profit organizations around the world that protect the rights of cats and other animals, for example, the Federation of Veterinarians of Europe (FVE) or the Federation of European Companion Animal Veterinary Associations (FECAVA). When it comes to breeding cats, the main felinological federations are: the International Feline Federation (FIFe – Fédération Internationale Féline), The International Cat Association (TICA), the Cat Fanciers Association (CFA), the World Cat Congress (WCC).

In Poland, about 9 million people have a cat as a pet, which means that in every fourth house we can find a representative of this species (Report TNS Polska, 2014). The analysis of the welfare of domestic cats in Poland has so far been dealt with to a small extent or not at all, hence this paper aims to verify the implementation of this issue in Poland on the basis of survey responses obtained from owners of pedigree and non-pedigree cats. Among other things, the influence of cats' sex, age and number of animals kept in the household on the answers given in the survey was examined.

Material and methods

The survey was created using a Google form and was addressed to people who own cats, but did not collect information about the owners themselves, so the breakdown of respondents was created only on the basis of answers about animals. The questionnaire included single and multiple-choice closed questions as well as open questions. The questions were designed in such a way that they did not impose the desired answer, which could immediately indicate whether or not the welfare of the household was maintained. The survey was sent via social media and directly to the people concerned by the work. All questionnaires were completed over the Internet without contact with the investigators. The questionnaires were completed anonymously, so that it was impossible to identify the person after the answer. The questionnaire sheet is attached as an attachment in the Appendix.

A total of 205 respondents participated in the survey, conducted in 2020 and 2023. The survey contained questions on several thematic blocks. In the first part of the survey, it was necessary to answer questions about the number of cats owned, their age, sex, origin, breed, castration/sterilization, possession of a "Cat Health Book". The next part of the questions concerned breeding females and their possible activities in the breeding. This series of questions was optional because the respondents did not have to be cat breeders. The third part of the questions concerned the environment in which the cats live. The respondents were asked to answer questions about cat toys, scratchers, cat places in the house, other animals in the house. The next questions concerned the safety of cats: securing the balcony door, having poisonous plants, taking care of cats when the owners are not at home and sanitary issues related to the litter box. The next series of questions concerned diet, health, past illnesses and beauty treatments.

The survey results were statistically analyzed using the SAS statistical package (SAS, 2014). The dependence of the answers given on the sex of the cat, its age, the number of cats in the household and whether the cat is purebred/crossbreed was analyzed using the chi-square test (Snedecor and Cochran, 1989), according to the following formula:

$$\chi^2 = \sum \frac{(f - F)^2}{F}$$

where: f – number of observations in the group; F – expected size of a given group.

Since the minimum requirement for group size in this test is 5 observations in a given category, some categories of the studied features were combined. This was especially true for

age groups; there were 7 of them in the survey. They were combined as follows: for cats aged 0-1 and 2-3 years, a common age group was created marked as "0-3 years", for cats aged 4-5 years and 6-7 years, another common age group was created - "4-7 years", while older cats (8-9 years, 10-11 years and over 12 years) were combined into one age group " ≥ 8 years".

Most of the comparisons between the answers to the questions of the analyzed survey showed no significant correlations ($P>0.05$). There were also comparisons which, due to the above-mentioned requirement regarding the minimum number of observations, could not be carried out because the number of observations in the category/categories was still too small despite being combined, or there were categories with a number of 0.

Results

Demographic analysis of cat data

Most respondents had one cat, 36 people had two cats at home, and 9 and 15 respondents had three and four or more cats, respectively. Respondents with one cat were slightly more likely to choose a male than a female. Respondents with two cats chose cats of different sexes, then only females, and least often all males. In the case of 15 respondents with more than four cats, no person had only male cats in the household, and 1 person had only female cats (Fig. 1). Due to the presence of empty classes, the number of cats in the household depending on the sex of the cat was not statistically analysed.

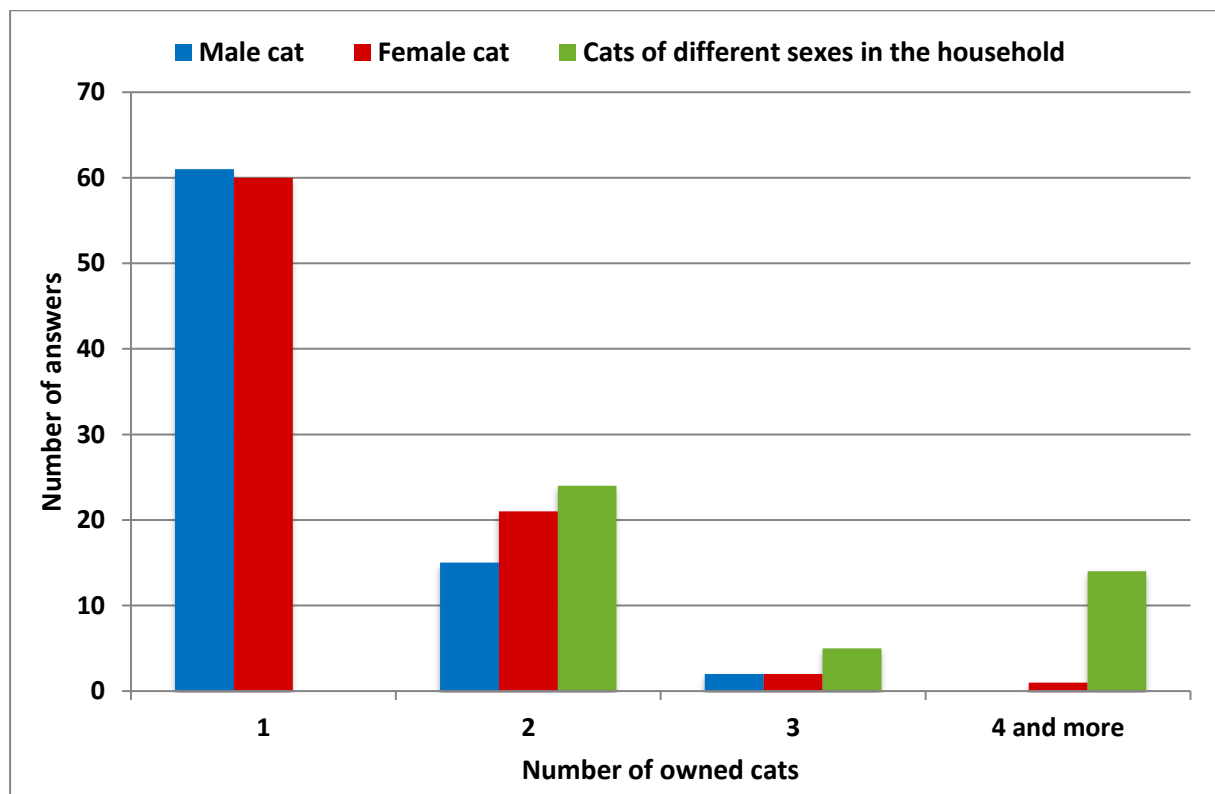


Fig. 1. Number and sex of owned cats

According to the respondents' answers, the age of the cats they owned was strongly differentiated with the predominance of young cats, aged 2-3 years. Quite a lot of people had very young cats (up to a year old) and slightly older cats, aged 4-5 and 6-7 years. Figure 2 shows the distribution of cats' sex and age. The relationship between the age and sex of the cats kept by the respondents was statistically insignificant ($P>0.05$).

More than 113 respondents had found cats they owned, 33 took animals from a shelter and 35 from a cattery. The remaining 16 respondents had cats from other sources, such as advertisements, family, friends or acquaintances. The distribution of the number of cats depending on sex and source of origin is shown in Figure 3. Due to the presence of an empty class, this relationship could not be analyzed statistically.

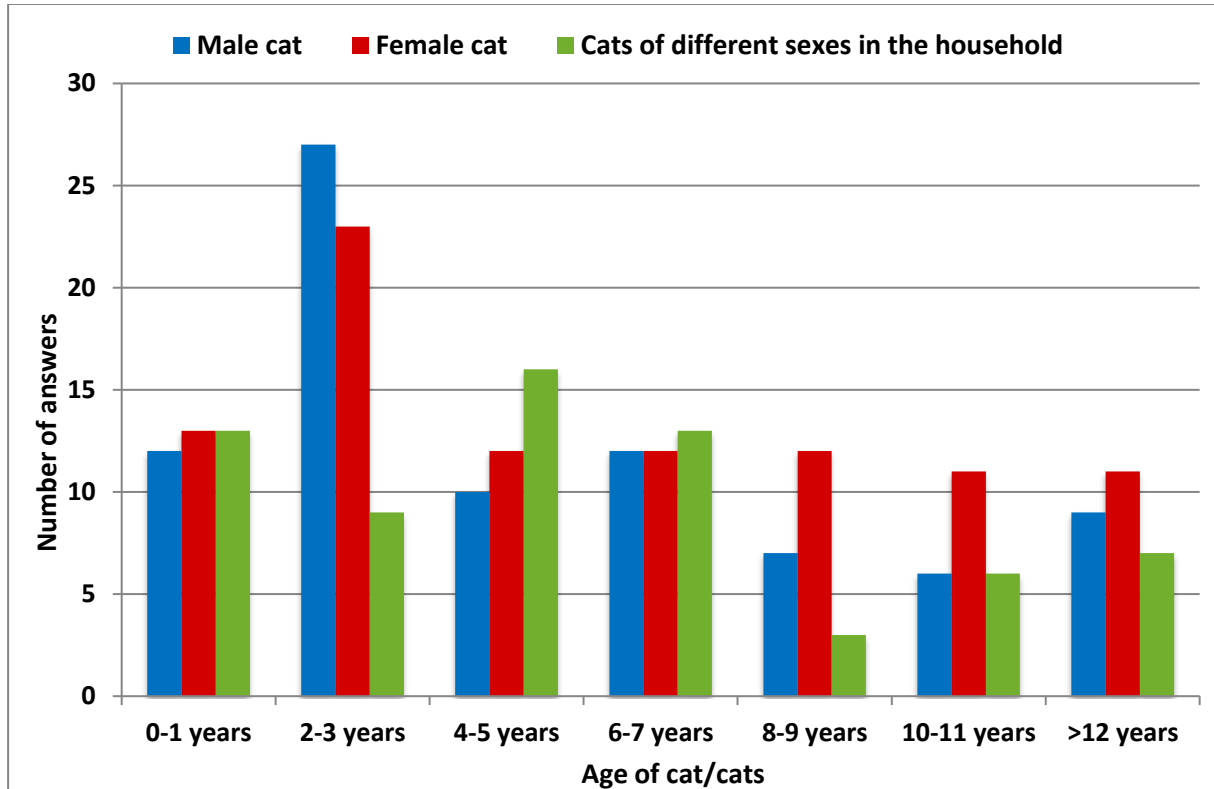


Fig. 2. Age and sex of cats kept in the household

Most of the respondents had non-pedigree cats, and only 39 had pedigree cats. In the case of pedigree cats, owners were additionally asked to provide the breed. Respondents indicated the following breeds: Maine Coon (11 times), British Longhair and Shorthair (1 time and 5 times, i.e. 6 times in total), Russian Blue and Persian (4 times each), Norwegian Forest, Ragdoll, Siberian and Bengal (3 times each). Other breeds, such as Turkish Angora, Burmese, Devon Rex, Canadian Sphynx, Siamese, Neva Masquerade or Himalayan, were mentioned by the respondents only once.

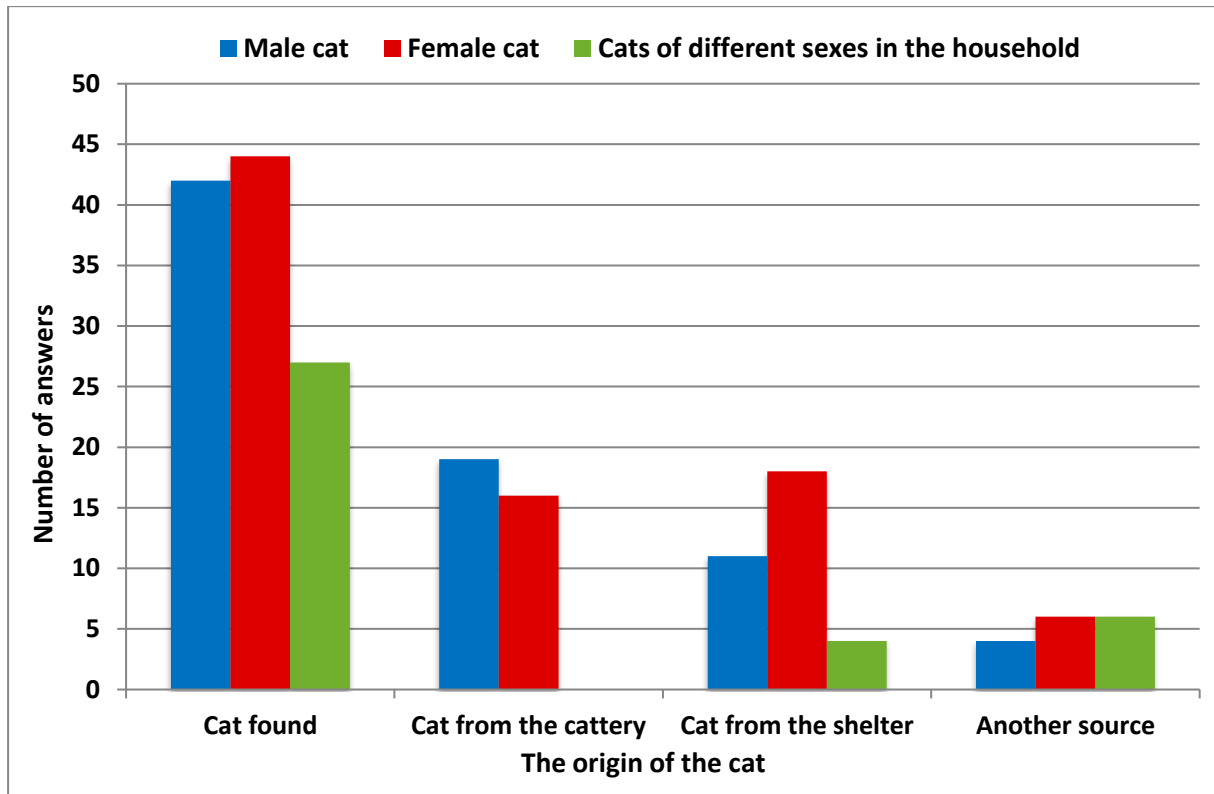


Fig. 3. Relationship between the sex of the cat and the source of its origin

Cats subjected to castration/sterilization and having a "Cat's Health Book" were owned by 173 respondents. It was found that 121 owners of one cat equipped it with a booklet, respondents with two cats in 60 cases had cat health booklets for cats. Respondents with three or more cats in 24 cases provided cats with health books. The relationship between the number of cats kept and the performance of castration/spaying was not significant ($P > 0.05$), while the relationship between the number of cats and having a cat health book was significant (Table 1). In the case of owners of one cat, people were three times more likely to state that the Cat's Health Book was missing than in the group of people with more cats. Possession of a cat's Health Book or performing a castration/sterilization procedure did not depend on the cat's sex ($P > 0.05$). On the other hand, the performance of the sterilization/castration procedure showed a highly significant dependence on the age of the cat. The results of this analysis are presented in Table 2. Most unneutered/non-sterilized cats were reported in the youngest age group (cats 0-3 years old), probably because they were either too young to undergo such procedures or the owners considered their possible use for breeding.

Table 1. Dependence of having a cat's health booklet on the number of cats in the household

Question / Answer	1. Number of cats in the household		χ^2	Probability
	1	2 and more		
6. Do the cat/cats have a Cat Health Booklet?				
Yes	97	76	4.00	0.0455
No	24	8		

Table 2. The dependence of sterilization/castration on the age of the cat(s)

Question / Answer	3. Age of cat(s)			χ^2	Probability
	0-3 years	4-7 years	≥ 8 years		
5. Are the cat(s) spayed/neutered?					
Yes	68	69	66	17.12	0.0002
No	29	7	7		

The use of female cats in breeding

When asked about the purpose of cats for breeding, 201 respondents gave a negative answer. There were only three affirmative answers and one person reported that he had a female cat withdrawn from breeding. Additional questions concerned breeding females and according to the surveys, 4 females were bred once. In three cases it was 4 times or more. Litters with 3-4 kittens prevailed, they were listed 6 times. In 9 cases out of 10, the respondents did not report any problems with the rearing of young by their mothers. Only one owner of a female cat the respondent stated that she was not a good mother. In the case of mating breeding females, the owners answered that it was accidental mating (4 cases) or mating with an unrelated male from outside of my own breeding (3 cases). Only two people stated that a female was mated with a related tomcat. Due to the small number of responses in this part of the survey, no statistical analysis was performed.

Conditions of keeping cats

Most of the respondents did not keep other animals in the household. The largest group of cat owners who did not own other pets were owners of one cat, as many as 121 people did not own another pet. Among the owners of 3 cats and 4 or more cats, 24 people did not have any other pet. This confirms the common belief that people who decide to get a cat most often do not decide to get other animals, regardless of the number of cats they own, although this relationship was not statistically significant ($P > 0.05$). Similarly, the relationship between keeping other pets at home and the sex of cats and their age was not statistically significant ($P > 0.05$). People with non-pedigree cats more often decided to have other animals (64 cases), and only 15 respondents with pedigree cats decided to have other companion animals, although there was no statistically significant relationship between the possession of other animals and the ownership of purebred or non-purebred cats ($P > 0.05$). 49 respondents with found cats opted for other pets. The owners of shelter cats were the least likely to choose another animal (only 9 respondents). Statistical analysis of the answers to these two questions showed no significant ($P > 0.05$) relationship between them.

The total of 77 respondents let their cats out of the house unattended. Among these people, there were only 7 respondents who owned pedigree cats and this relationship turned out to be highly significant (Table 3). Most, however, did not let their cats out unsupervised. Cats kept alone were released by 44 respondents, while cats kept in pairs were released by only 20 people. The dependence of releasing cats on their number was statistically insignificant ($P > 0.05$). The dependence of letting the cat outside on its origin turned out to be significant (Table 3). Significantly more cats found were released outside. This may be due to the fact that found cats usually have a harder time adapting to life confined in the house.

Table 3. The dependence of cats going outside on whether the cat is purebred

Question / Answer	7. Are the cat(s) outdoors – leaving the house unattended?		χ^2	Probability
	Tak / Yes	Nie / No		
4. What is the origin?				
Cat from the cattery	11	30		
Cat from the shelter	9	26	6.52	0.0383
Cat found/from the other sources	57	72		
8. Are the cat/cats purebred?				
Yes	7	32	7.90	0.0049
No	70	96		

According to the respondents, the vast majority of their cats had the opportunity to rest alone without contact with other individuals (199 responses). Most often, these cats chose their own bed to rest (84 responses), followed by a bed (29 responses) or a wardrobe (11 responses). Respondents also indicated other places, most often a scratching post or a separate room. Respondents mentioned many different places that result from the preferences and nature of the cat. Most of the respondents provided the cats with the opportunity to fulfill their natural needs through access to a scratching tree, and this access was significantly dependent on the age of the cat (Table 4). Owners of younger cats paid more attention to access to a scratching post. The most common toys were fishing rods for cats (32 responses), rubber balls (28 responses), then stuffed animals and interactive toys. Only 9 respondents said that their cats often used things found in the house or garden to play, or did not have any additional toys. The owners of indoor cats provided the cats with a wide range of toys (for example, tunnels, lasers, catnip balls, play tracks). The dependences of the cat's resting place or toys on sex, age and number of cats in the household were statistically insignificant ($P>0.05$).

Table 4. Relationship between a cat's access to a scratching tree and its age

Question / Answer	3. Age of cat(s)			χ^2	Probability
	0-3 years	4-7 years	≥ 8 years		
18. Do the cat/cats have access to the scratching tree?					
Yes	82	60	49	7.38	0.0249
No	15	16	24		

According to the analyzed surveys, 100 cat owners secured windows/balcony doors against accidental slamming, although there was no significant relationship between this response and the gender, age or number of cats ($P>0.05$). None of the plants harmful to animals listed in the survey were found in 93 cat owners. Two or more of those dangerous plants could be found in 69 respondents' homes. Among the owners of pedigree cats, only 22 respondents did not have dangerous plants, and among the owners of non-pedigree cats – 71 people. Aloe was most often mentioned as a dangerous plant in the home. Next came Spathiflora, monstera, sansevieria and yucca. Statistical analysis of the relationship between the presence of harmful plants in the house and the age of cats or their number or being pedigree/non-pedigree was not statistically significant ($P>0.05$). On the other hand, the relationship between the presence of harmful plants in the house and the sex of cats was highly significant (Table 5). Harmful plants were the least likely to be found in the home of owners of cats of different sexes.

Table 5. The dependence of having harmful plants in the house on the sex of cats

Question / Answer	2. Sex of cat(s)			χ^2	Probability
	Male	Female	Cats of different sexes in the household		
21. Are there plants in the house such as:					
Aloe	41	73	13	32.53	0.0011
Dracaena/Poinsettia	10	24	9		
Yucca	11	14	7		
Monstera	18	43	10		
Sansevieria	22	44	7		
Spathiphyllum/Spathiflora	25	70	9		
None of the above	38	32	23		

Cats were most often left alone at home for up to 12 hours a day, while 84 of the surveyed said that their cat is always at home with them. Single cases of leaving cats alone for 12 to 24 hours and for more than 24 hours were also recorded, and after discarding these cases, there was no significant relationship between the answers to this question and the age of cats, their sex or their number in the house ($P>0.05$).

In the event of a longer absence from the owner's home, more than half of the respondents left their cats at their place of residence, providing them with the care of another person, and two left them to themselves. People taking care of cats in the place of residence most often visited the cats once or twice a day. Cats were visited more than twice a day in 22 surveys. In the case of this question, no significant relationships were found with sex, age or number of cats in the household ($P>0.05$).

Over 2/3 of the respondents provided one litter box per cat. 73 respondents changed the litter in the litter box less than once a day, once a day (60) and after each use by the cat (65). General cleaning of the litter box once a week was carried out by 86 respondents. The answers to the discussed questions showed no dependency on the number and sex of cats kept ($P>0.05$). However, a highly significant relationship between the discussed issue and the age of cats was found (Table 6). Younger cats are more likely to have their litter boxes cleaned more often than older cats.

Table 6. The dependence of the frequency of clearing the litter box on the age of the cat(s)

Question / Answer	3. Age of cat(s)			χ^2	Probability
	0-3 years	4-7 years	≥ 8 years		
27. How often is a general cleaning of the litter box performed?					
once a day/more than once a week	27	9	9	16.62	0.0049
every week	37	37	24		
every two weeks	15	15	14		
less often	14	15	25		

Veterinary care, nutrition and cat care

Cats were usually taken to the vet once a year (60 responses), "only when something happens" (54 responses) or once every six months (45 responses). In more than half of the cases, the respondents took their animals to the vet with the appropriate frequency, although this response was not found to be related to age, sex and the number of cats in the household ($P>0.05$). In 29 cases, the respondents' cats were chronically ill and were taken to the vet once every 3 months. According to the analyzed surveys, the most common diseases of cats were diseases related to

the urinary system (9 responses), followed by diseases of the digestive system (8 responses) and dermatological (4 responses), and in 4 cases these were cardiological diseases. Also in the case of the occurrence of chronic diseases in cats, no significant correlations were found with sex, age or number of cats in the household ($P>0.05$). Bacterial and viral diseases affected 27 cats, and all the animals were treated by veterinarians each time. The most common disease was feline rhinitis, followed by calicivirosis, and in individual cases cats suffered from various types of inflammation (bladder, rectal glands, throat). Due to the low number of responses, this question was not statistically analysed. Vaccinations of cats were carried out by over 2/3 of the owners, and slightly over 1/4 of outdoor cats were vaccinated against rabies. There were no significant correlations between rabies vaccination and sex, age and number of cats in the household ($P>0.05$). According to 27 responses, cats that were only taken to the doctor when something was wrong were regularly vaccinated. Cats taken to the doctor at least once a year were not vaccinated in a total of 12 cases. This may mean that veterinarians have not always suggested vaccination for some pets. And this relationship turned out to be highly significant (Table 7). In 68 cases, the owners of outdoor cats provided their animals with protection against ticks and fleas, and this relationship also turned out to be highly significant (Table 8).

Table 7. The relationship between the frequency of vaccination of cats and the frequency of visits to the vet

Question / Answer	40. Is the cat regularly vaccinated?		χ^2	Probability
	Yes	No		
36. How often is the cat taken to the vet?				
Only when something happens/less than once a year	31	27	20.5	0.0001
Once a year	48	12		
Once every six months or more often	73	12		

Table 8. The relationship between letting cats outside and protection against ticks/fleas

Question / Answer	7. Are the cat(s) outdoors – leaving the house unattended?		χ^2	Probability
	Yes	No		
42. Does the cat have tick/flea protection?				
Yes	68	30	81.1	0.0001
No/No, it's not outgoing	9	98		

The cats of only 69 respondents had contact with wild or unknown cats and this question did not show a statistically significant relationship, among others with the sex of cats and their number ($P>0.05$). Staying under constant veterinary care was highly significantly associated with the sex of the cat (Table 9), and significantly with their age (Table 10). The regularity of cats' vaccination was also highly significantly related to the age of the cats (Table 10). Male cats were more often under veterinary care than females, and older cats more often than younger ones. Older animals were more likely to suffer from bacterial or viral diseases, while younger ones were more often regularly vaccinated (Table 10).

Table 9. Dependence of being under the care of a veterinarian on the sex of cats

Question / Answer	2. Sex of cat(s)			χ^2	Probability
	Male	Female	Cats of different sexes in the household		
39. Is the cat under constant veterinary care due to the diseases it suffers from?					
Yes	22	9	9	11.10	0.0039
No	12	26	15		

Table 10. The dependence of the answers given by the respondents on the age of the cat(s)

Question / Answer	3. Age of cat(s)			χ^2	Probability
	0-3 years	4-7 years	≥ 8 years		
39. Is the cat under constant veterinary care due to the diseases it suffers from?					-
Yes	12	12	21	6.1	0.0474
No	27	28	18		
40. Is the cat regularly vaccinated?					
Yes	82	59	44	15.5	0.0004
No	13	17	29		
44. Has the cat had any bacterial/viral illnesses?					
Yes, and he was vet treated	7	10	15	6.5	0.0379
No	90	66	58		

In most cases, the respondents declared that the body weight of the animals was correct, but in 18 cases the cats were not weighed. Of the cats that were weighed and were the only feline tenants in the owners' apartments, females had incorrect body weight more often (8 responses), compared to males (6 responses). There was no statistically significant relationship ($P>0.05$) between the correct body weight of cats and their number in the household or sex or feeding method and castration/sterilization. However, the relationship between correct body weight and age was significant (Table 11). Most often, the correct body weight was stated by the owners of very young cats up to 3 years of age.

Table 11. The dependence of the answers given by the respondents on the age of the cat(s)

Question / Answer	3. Age of cat(s)			χ^2	Probability
	0-3 years	4-7 years	≥ 8 years		
46. Is the weight of the cat correct?					
Yes	83	53	53	7.0	0.0296
No/I don't know, it's not weighed	14	23	20		

Cats were fed in a secluded place in a small space. Only 19 respondents gave food to cats next to the litter box. 40 respondents fed the cats on dry food and 47 on wet food. 53 respondents fed the cats dry and wet food. Other respondents also occasionally used other diets, such as raw meat (BARF diet), cooked meat or offal. Almost 1/3 of the respondents used dry food of various brands, and the same was the case with ready-made wet food, of which 1/3 of users used veterinary food. It should also be noted that in 41 responses, the respondents mentioned more than one food or stated that they used different kinds of food. The diet of the cat/cats showed no statistically significant correlation ($P>0.05$) with the number of cats, their sex and age.

About a third of cat owners used only cat-specific treats, while 29 cats were given no treats at all. The vast majority of the cats were supplemented neither with vitamin nor with mineral preparations, in any way. There were no statistically significant relationships ($P>0.05$) between the cats receiving treats or mineral and vitamin supplementation and the sex, age and number of cats in the household. On the other hand, the relationship between mineral and vitamin supplementation and the fact whether the cat was purebred or not was highly significant (Table 12). Slightly more non-pedigree cats were supplemented than purebred cats.

Table 12. The dependence of mineral and vitamin supplementation on whether the cat is pedigree/non-pedigree

Question / Answer	35. Is the cat additionally supplemented?		χ^2	Probability
	Yes (minerals+vitamins)	No		
8. Are the cat/cats purebred?				
Yes	15	23	12.22	0.0005
No	24	140		

When it comes to drinking water, the responses showed that cats were most often given fresh water to drink. Milk or cream was given to the cats in 27 cases, but only one response described it as "lactose-free". When it comes to the method of serving water, more than half of the respondents served water in a bowl or other vessel, of which 48 additionally used other forms of water administration, such as fountain, tap water or mineral water. The answers to these questions did not show a statistically significant relationship ($P>0.05$) with the sex of the cats, their age and the number of cats kept.

Respondents most often answered affirmatively to the question about the cat's undercoat or gave the answer "I don't know". More than half of the owners brushed their cats regularly and also gave them anti-hairballs. At the same time, 30 people with cats with an undercoat did not give them any such preparations. Among the respondents who did not know whether their cat had an undercoat, only 28 administered anti-hairball preparations. Most of the answers to the above questions did not show statistically significant ($P>0.05$) relationships with sex, age and number of cats. The exception was a significant relationship between the administration of anti-hairball preparations and the sex of the cats (Table 13). More than two thirds of cats of different sexes received such preparations.

Table 13. Dependence of the administration of anti-hairballs on the sex of cats

Question / Answer	2. Sex of cat(s)			χ^2	Probability
	Male	Female	Cats of different sexes in the household		
49. Are anti-hairballs given to the cat?					
Yes	39	38	29	6.55	0.0378
No	39	46	13		

Discussion

Demographic analysis of cat data

The responses to our surveys showed that cat owners usually had one or two cats at home. People with one cat most often chose males, while respondents with two cats at home most often had cats of different sexes. They were mostly young cats, two or three years old, although many respondents had younger cats, less than one year old, and older cats, 4-7 years old. The results similar to ours were obtained by Habacher et al. (2010) for cats in the UK and de Souza Machado et al. (2020) in a study of cat owners in Brazil, and Grigg and Kogan (2019), who conducted a pilot study among cat owners in the US.

Similar to the analyzes performed by de Souza Machado et al. (2020) in Brazil and Grigg and Kogan (2019) in the United States, the cat owners we surveyed had cats found or taken from shelters. There were mostly non-pedigree, and neutered/spayed animals, for which

the owners obtained a cat health booklet. However, in our research, the sterilization/castration procedure depended on the age of the cat, the youngest cats more often have not undergone this procedure yet. Slightly different results were obtained by Sandøe et al. (2017), who analyzed the domestic cat population in Denmark, as purebred cats predominated in their studies, followed by mixed breeds, although similarly to our study, most of these cats were spayed or neutered.

The use of female cats in breeding

Questions about breeding female cats were optional, because it was expected that the respondents would not necessarily be cat breeders, and these predictions were confirmed. The vast majority of respondents had spayed/neutered cats, while in individual cases the females were intended for breeding, which is generally consistent with the results obtained by Grigg and Kogan (2019) for cats kept by Americans, most of whom (40% males and 45% females) was also spayed or neutered. Similarly, for cat owners in Denmark (Sandøe et al., 2017), most of the animals were neutered (47% males) or spayed (over 39% females) and so did not participate in breeding. Similar results were also obtained by de Souza Machado et al. (2020) for cat owners in Brazil with almost 88% of their cats spayed/neutered.

Conditions of keeping cats

According to the responses in this study, the vast majority of cats had the opportunity to rest alone without contact with other individuals. Most often, an own bed was chosen, followed by a bed or a wardrobe, as well as other places, most often a scratching post or a separate room. Almost 82% of the respondents provided cats with access to a scratching post and it showed a significant dependence on the age of the cat, with younger cats having access to the scratching post more often. On the other hand, the owners of cats kept only at home provided the cats with a wide range of toys (rubber balls, stuffed animals and fishing rods). Similar results were obtained by Grigg and Kogan (2019) for American cats, whose owners in more than 92% of cases provided a quiet and peaceful place to hide, and in 76% a comfortable bed, moreover, in about 81% they bought various cat toys and in almost 69% and 52% respectively scratchers and cat climbing trees. Cat owners in Brazil also bought toys for their cats in more than 76% of cases and provided a place to sleep in their room in more than 86% of cases (de Souza Machado et al., 2020).

The topic of ornamental poisonous plants at home is very important, especially in the context of animals that stay at home alone for a long time and may start gnawing such plants out of boredom. This can result in acute poisoning with diarrhoea, vomiting and pain, but can also be fatal. Hence, our survey included a question about having certain ornamental plants at home. Almost half of cat owners did not have any of the plants listed in the survey that are harmful to animals. More than 1/3 of the respondents had two or more of these dangerous plants at home, which may indicate insufficient knowledge of the harmfulness of ornamental plants to cats. The problem of plants harmful to cats showed a significant dependence on the sex of cats, and people with cats of different sexes were less likely to buy such plants. Aloe was the most popular answer. Severino (2009) drew attention to this problem, stating that even among veterinarians it is not common knowledge. Although the quoted author (Severino, 2009) stated that cases of poisoning with plant toxins in dogs or cats are not frequent, they do occur and cited examples of many different plants poisonous to dogs and cats that people used to keep at home (e.g. philodendron, monstera, ficus, croton) or in the garden (e.g. oleander, yew, juniper, goldenrod, some bulb flowers) or sometimes brought as Christmas decorations (mistletoe, holly, Poinsettia), however, aloe was not among the plants she mentioned, which appeared most often as an answer in our research.

Most of the respondents in our research, apart from a cat/cats, had no other animals at home (including dogs). This is in line with the results obtained by Grigg and Kogan (2019), who found that among American cat owners, 46% did not own a dog, and 35% of them had another dog in addition to a cat.

Most of the respondents did not let their cats out of the house unsupervised, and this activity showed a significant relationship with whether the cat was purebred. Only in a few cases were pedigree cats released in comparison with non-pedigree cats. However, in the studies of Habacher et al. (2010) in the UK, only 21.4% of cats were only indoor cats, while the vast majority were temporarily out of the house (almost 78%). This was also the case for cat owners in Denmark (Sandøe et al., 2017), of whom only about 17% locked their cats up without being able to go outside. In our analyses, this may be partly due to a change in the way cats are viewed as members of the family, and it may also be due to the concern that a cat may get lost or run away, particularly if it has been found or taken from a shelter. Another aspect that should be emphasized is the differences in the way of living between Polish and British or Danish cat owners. The latter usually live in houses with a smaller or larger garden, where the cat can move freely. On the other hand, the Polish owner of a cat is usually a person living in a multi-family and often multi-story building, which makes it difficult for cats to go out on their own, and walking a cat in harness and on a leash, just like a dog, is not very popular in our country. Interestingly, Grigg and Kogan (2019) obtained similar results to those obtained in this study, referring to the keeping of cats only at home, in American cat owners, who in more than 60% of cases did not let their cats outside. Also, a similar approach to letting cats outside was presented by cat owners in Brazil, among whom about 78% did not let their charges out of the house, which was also related to the way of living (de Souza Machado et al., 2020). Cat owners in Italy treated their charges in a similar way, among whom 63% of respondents did not allow their cats to go outside, and 35% let their cats outside (Soares Filipe et al., 2021).

Cats most often stayed at home alone in this study for up to 12 hours a day, or household members were constantly at home with a cat. To some extent, similar results were obtained in their research by Grigg and Kogan (2019), because Americans left their cats for up to 12 hours, sometimes less (usually 5-8 hours in over 30% of cases), and only in over 11% of cases cats they stayed with the owners all the time. Also de Souza Machado et al. (2020) found that more than 10% of cat owners in Brazil did not leave the house and did not leave their charges.

In the case of a longer absence from the owner's home, most respondents in the presented research left their cats at home, providing them with the care of another person, and only slightly more than 4% left them unattended. People taking care of cats in the place of residence usually visited the cats once a day. In a Brazilian study by de Souza Machado et al. (2020) about 40% of respondents left their cats at home alone when going out every day, and about 22% of people did not leave the house, and just over 38% stated that cats are not alone when the owner is away.

The vast majority of respondents in our research provided one litter box per cat, which can be considered a bit low, because in American studies (Grigg and Kogan, 2019), cat owners allocated an average of 1.7 litter boxes per cat, and up to four litter boxes at most. In contrast, a Brazilian study asked whether owners provide their cats with access to a litter box at all, and in more than 82% of cases, cats used a litter box, but at the same time, in about 5% of the responses, respondents stated that the cat has a litter box that it does not use. On the other hand, about 13% of respondents did not provide their pet with access to a litter box and perhaps these were cats that were constantly away from home (de Souza Machado et al., 2020).

In our research, cleaning in the litter box (litter change), according to the majority of respondents, was usually carried out less than once a day. About half of the respondents carried out a general cleaning of the litter box once a week, and the frequency of this activity depended only on the age of the cats. The younger cats' litter box was cleaned more often. Slightly similar

results were obtained by Grigg and Kogan (2019). In their study more than 63% of American cat owners replaced the litter in the litter box once or several times a day, and a general cleaning of the litter box once a day was reported by more than 45% of cat owners, which was a slightly better solution than cleaning the litter box once a week used by Polish cat owners. However, in the cited studies, the frequency of cleaning the litter box depended only on the number of cats (Grigg and Kogan, 2019).

Veterinary care, nutrition and cat care

Cats were usually taken to the vet once every six months, then once a year or only when something was wrong. It is recommended that cats under the age of 10 be taken to the doctor once a year, and at least twice a year for older cats over 10 years of age (Kipperman, 2012), so it can be concluded that in more than half of the cases respondents took their animals to the vet in proper time. However, in our research, keeping a cat under the care of a veterinarian showed a significant dependence on its sex and age. Constant veterinarian care was more often declared by the owners of male cats and older cats, over 8 years old. According to a Brazilian study by de Souza Machado et al. (2020), almost half of cat owners in this country visited the veterinarian with their pet occasionally, regardless of whether the cat was kept indoors or was outside; while more than 17% of cat owners in Brazil have never taken their cat to the vet.

According to the surveys analyzed in this paper, the most common diseases of cats were diseases those of the digestive system, followed by the diseases of the urinary system and cardiological diseases, although most of the owners declared that the cat was healthy. The occurrence of chronic diseases in cats showed no significant dependence on the sex and age of the cat, breed and the number of cats in the household. On the other hand, owners of older animals declared a history of bacterial/viral diseases significantly more often. Different results were obtained by de Souza Machado et al. (2020) for cats in Brazil, where cat health problems were marginal, as only about 3% of cats had kidney problems, about 4% of cats had urinary tract problems, and less than 2.5% had respiratory problems, while on a diet almost 13% of cats were treated.

In our research, most cat owners vaccinated their pets, with about a third of outgoing cats vaccinated against rabies and about half also provided some form of protection against ticks and fleas. 45% of cats taken to the doctor occasionally were regularly vaccinated. The majority of cats taken to the doctor at least once a year were significantly more frequently vaccinated. With the age of cats, the number of regularly vaccinated animals decreased gradually but significantly. A survey of British people, conducted by Habacher et al. (2010) stated that all respondents had vaccinated their cats in the previous 12 months, with vaccination coverage depending on the age of the cats and the number of cats in the household. Similarly, in the Brazilian studies, almost 82% of owners always vaccinated and dewormed their cats, about 17% did it occasionally, and only 2% did not do it at all (de Souza Machado et al., 2020).

Approximately 80% of cats in the presented studies had the correct body weight, but it depends on their age, but did not depend on the performance of the castration procedure or the cat's nutrition. The owners of young cats, up to 3 years of age, more often declared the correct weight of the cat. However, this can be considered a better result than the one cited by de Souza Machado et al. (2020), who found that, according to the responses of the Brazilians, only about 56% of the cats' body weight was appropriate, while almost 32% of their cats showed signs of overweight and 5% of already obese.

According to the responses in our studies, in most cases, cats were fed in a secluded place in a small space. Only a few respondents gave food to cats next to the litter box. According to the research by Grigg and Kogan (2019), American cat owners allocated on average one feeding place per cat, and it could be up to three such places.

The cat owners surveyed in our research used dry and wet food simultaneously in almost half of the cases. Respondents also used other ways of feeding. Cats drank mostly fresh clean water from a bowl or other vessel. Some were also given cow's milk, which cats generally shouldn't drink because they are lactose intolerant. More than half of cat owners used only cat-specific treats. Most of the cats did not receive any vitamin and mineral preparations. As stated by Stella and Cronney (2016), it is important not only to vary the type of food for cats, but also the way it is served, i.e. avoiding monotony (the same bowl all the time) to prevent boredom in cats. Cats as predators should face new challenges also in terms of food acquisition. Therefore, outdoor cats are in a better situation than those that stay at home all the time. Such cats can be given food in interactive toys or mats, from which the cat will have to get out ("hunt") food on its own. Also, according to Danish studies, cats kept at home showed symptoms of boredom most often (over 19% of the surveyed), compared to just over 6% of cats using the garden, which could also be related, among others, to the monotony of food and the lack of entertainment in the form of hunting (Sandøe et al., 2017).

The majority of the surveyed said their cat had an undercoat and these owners groomed their pets regularly, and more than half also gave them lint removers. In our studies, the administration of anti-fluff preparations showed a dependence on the sex of cats. The greatest number of people with cats of different sexes administered the above-mentioned preparations. According to a Brazilian study by de Souza Machado et al. (2020) beauty treatments, e.g. frequent brushing was used by more than 43% of owners of indoor cats and about 27% of owners of outdoor cats. About the same number of owners brushed their cats occasionally and did not groom their cats, whether they were out of the house or not (de Souza Machado et al., 2020).

To sum up, it can be said in most cases the answers to two different questions in the survey were not significantly related. However, non-pedigree and found cats were significantly more frequently released outdoors. Non-pedigree cats were also significantly more often supplemented with mineral preparations and vitamins. Significantly more often, owners of more than one cat had health booklets of their cats than those who had only one cat. Outdoor cats were also significantly more often provided with protection against ticks/fleas. Cats whose owners visited the veterinarian at least once a year were significantly more regularly vaccinated. Also, significantly less harmful plants were found in the owners of cats of different sexes. Males were significantly more often under constant veterinary care than females or cats of different sexes. On the other hand, the owners of cats of different sexes in the household significantly more often gave them anti-hairball preparations. A greater number of questions was significantly dependent on the age of the animals. Thus, there were significantly more non-castrated/non-spayed cats in the group of the youngest up to 3 years of age. They were probably still too young to perform the procedure or the owners were still considering using the cat in breeding. Also, significantly more of the youngest cats had access to a scratching post, they were more often vaccinated and had their litter boxes cleaned more often than older cats. On the other hand, older cats significantly more often required constant veterinary care and were also more likely to suffer from bacterial or viral diseases. Owners of the youngest cats (0 to 3 years) significantly more often found that their body weight was normal. It can be described as a good attitude of respondents to most important issues related to the welfare of cats. Veterinary care, nutrition and care of cats at home were at a level comparable to data from the literature. In particular, it should be emphasized that most of the respondents made every effort to provide the animals with appropriate living conditions and tried to adapt the equipment of the house to the presence of cats, so as to ensure maximum comfort and safety for them. Cat owners, on the other hand, did not feed their cats such a way that the animals had to extract it themselves, which usually prevents boredom. This is especially important for cats who are confined to the house all the time, without being able to vary their environmental stimuli. Most cat owners used

standard cups and it seems that this aspect could be improved with proper education. The awareness of cat owners about harmful and poisonous plants that appeared at home with cats and the need to improve through education was also low and required improvement by education of cat owners, as well as giving cats cow's milk, the drinking of which is stereotypically associated with a cat, although the lactose contained in milk is harmful to these animals.

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Appendix: A survey addressed to owners of domestic and breeding cats

- 1. Number of owned cats:**
1 2 3 4 or more
- 2. Sex of the cat(s):**
Female Male Cats of different sexes in the household
- 3. Age of the cat/cats:**
0-1 years 2-3 years 4-5 years 6-7 years
8-9 years 10-11 years 12 years or more
- 4. What is the origin?**
Cat from a cattery The cat from the shelter Cat found
- 5. Are the cat(s) spayed/neutered?**
Yes No
- 6. Does the cat/cats have a Cat Health Booklet?**
Yes No
- 7. Are the cat(s) outdoors – leaving the house unattended?**
Yes No
- 8. Are the cat/cats purebred?**
Yes No
- 9. If the cat is purebred, please provide the breed:**
- 10. Are the cat/cats intended for breeding?**
Yes No
- 11. Question about breeding females: How many times has a female given birth?**
1 2 3 4 or more
- 12. Question about breeding females: What size are the litters?**
1-2 kittens 3-4 kittens 5-6 kittens More than 6 kittens
- 13. Question about breeding females: How did the mother raise the young?**
Good Moderately She was not a good mother
- 14. Question about breeding females: Has the female been mated?:**
An unrelated tomcat from her own kennel
A related tomcat from her own kennel
An unrelated alien tomcat (from another cattery)
If outgoing, did she have a litter from an unknown sire (accidental mating)
- 15. Are there other pets in the house?**
Yes No
- 16. Do the cat/cats have a place where they can rest without contact with other household members?**
Yes No
- 17. If the cat/cats have a place where they can rest without contact with other household members, what is this place?**
Wardrobe Bed Own lair Another answer:
- 18. Do the cat(s) have access to the scratching tree?**
Yes No
- 19. What toys does the cat/cats have access to?**
Fishing rods for cats Soft toys for animals
Rubber/plastic balls Interactive toys
Another answer:
- 20. Are windows/balcony doors secured?**
Yes No

21. Are there plants in the house such as:

Dracaena	Yucca	Monstera	Aloe
Spathiflora	Poinsettia	Sansevieria	None of the above

22. How much time do cats spend at home alone?

Household members are always at home	Between 12 and 24 hours a day
Up to 12 hours a day	Often left alone more than 24 hours

23. During prolonged absences from home, such as weekend or vacation trips (more than 2 days), cats are:

Left alone

Under the care of another person visiting the cats during the day at their place of residence

They are driven to friends/family elsewhere

At the pet hotel

there are no such situations

24. If you answered the previous question "Under the care of another person visiting cats during the day at the place of residence", please try to specify how often they are visited:

Less than once a day	Twice a day
Once a day	Three or more Times a day

25. How many litter boxes are there for one cat?

1 per cat	More than 1 per cat	1 in more than 1 cat
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26. How often is the litter in the litter box changed?

After each use by the cat	Less than once a day
Once a day	There is an automatic litter box in the house

27. How often is the general cleaning of the litter box carried out?

Once a day	More than once a week	Less often
Once a week	Once every two weeks	

28. Where is the food place?

In a secluded place in a small space

In a crosswalk in an open space

Next to the litter box

No fixed place. The meal is served to the cat in the place where it is currently staying

29. How is the cat fed?

Dry food	BARF	Food leftovers from other household members
Wet food	What they hunt	Another answer:

30. If dry food is served, please give its name:

31. If wet food is served, please provide its name:

32. In what form do cats get treats?

Human food (sausage, ham, cheese, ect.)	They don't Get treats
Cat treats only	Another answer:

33. What does cat drink in the household?

Fresh water	Mineral water	Milk
Standing water	Another answer:	

34. How do the cat(s) get water?

The water is standing still in a bowl or other vessel	Cat fountain
Fresh tap water	Another answer:
They do not receive water	

35. Is the cat additionally supplemented?

Yes, with a vitamin blend	No
Yes, with specific minerals	

36. How often is the cat taken to the vet?

Once a month Once every 3 months Once every six months
Once a year Less than once a year Only when something happens

37. Is the cat chronically ill?

Yes No

38. If the cat is chronically ill, please indicate what ailments the cat suffers from:

Diseases of the digestive system Diseases of the nervous system
Diseases of the urinary system Dermatological diseases
Cardiological diseases Another answer:

39. Is the cat under constant veterinary care due to the diseases it suffers from?

Yes No

40. Is the cat regularly vaccinated?

Yes No

41. If the cat is outside, is it vaccinated against rabies?

Yes No Not applicable

42. Does the cat have tick/flea protection?

Yes No No, it's not outgoing

43. Does the cat have contact with wild or unfamiliar cats?

Yes No

44. Has the cat suffered from any bacterial/viral diseases?

Yes, and he was treated by a veterinarian No
Yes, and he Has not been treated by a veterinarian

45. Please list the diseases that the cat has undergone:

46. Is the body weight of the cat correct?

Yes No I don't know, it's not weighted

47. Does the cat have an undercoat?

Yes No I don't know

48. If the cat has an undercoat and/or long hair, is it brushed regularly?

Yes No Only at the groomer

49. Are anti-hairballs given to the cat?

Yes No