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SAFE AND FELINE-FRIENDLY VETERINARY VISITS AND TRAVELS TO THE VETERINARY PRACTICE: A CASE REPORT

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Abstract. The increasing prevalence of domestic cats as integral family members has accentuated the need for understanding and addressing feline well-being during travels and veterinary visits. Despite the rising awareness of feline behavior and emotions, a significant gap remains in comprehending the nuances of human-cat communication and recognizing potential stressors that cats may face in veterinary settings. This case report analyzed the experiences of a 15-year-old female cross-breed cat during a veterinary visit, shedding light on stimuli that evoke feline fear. A key focus of this study was the identification of prevalent feline fears and anxieties, emphasizing their potential to disrupt veterinary care and contribute to caregivers avoiding routine visits. Drawing on recommended practices and the five pillars of a healthy feline environment, the paper proposes strategies to foster positive and stress-free experiences for cats during veterinary visits and travels. The findings underscore the imperative for further research to delve into caregivers' perspectives on feline stress during veterinary visits and the feasibility of implementing stress reduction strategies in veterinary offices.

Key words: animal welfare, fear, anxiety, stress, low-stress handling, behavior, feline behavior.

INTRODUCTION

In numerous contemporary societies, domestic cats (*Felis silvestris catus*) have become popular companions, viewed as integral members of the family who offer affection and joy to the household (CANZ 2020; Crowley et al. 2020; AMA 2022). According to the European Pet Food Industry Federation (FEDIAF), the cat population in Europe has steadily increased over the past decade, rising from 90 million in 2012 (FEDIAF 2012) to 127 million in 2022 (FEDIAF 2022). In this report Poland takes the seventh place with 7.1 million owned cats. This trend is not limited to Europe; the ownership of cats in Australia is estimated at 3.3 million, and in New Zealand at 1.3 million (Johnston et al. 2017; CANZ 2020; AMA 2022). Tim Wall in his article suggests that this trend may be linked to urbanization and the prevalent belief

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that cats require less space and maintenance than dogs (Wall 2022). However, it is important to note that a significant yet often overlooked challenge lies in human-cat communication.

Unlike dogs, which are historically pack animals selected to work for and follow human orders, cats historically hunted rodents independently, not necessitating the vivid demonstration of their emotional states to fulfill their needs (Martens et al. 2016). This consideration may explain why cat owners report that their pets predominantly experience six basic emotions (anger, joy/happiness, fear, surprise, disgust, and sadness), while dog owners more frequently attribute also four secondary emotions (shame, jealousy, disappointment, compassion) to their companion animals (Martens et al. 2016). This data suggests that the emotional range involved in human-cat communication is comparatively lower than that in human-dog interaction.

Mammals share similar brain structures enabling them to experience unconditioned emotional affective states, including fear (Panksepp 2011). In this category, the domestic cat holds a special position. Feline behavior, emotions, and motivations are becoming increasingly recognizable, as indicated by the significant rise in academic papers related to “feline behavior” listed on Google Scholar – from just over 3,000 in 2003 to over 8,000 in 2023. Despite this progress, studies reveal that feline caregivers still possess less knowledge about their pets’ emotional states compared to dog owners (Pickersgill et al. 2023). Furthermore, owing to their heightened senses, cats receive more stimuli than their guardians and exhibit more impulsive reactions, making them susceptible to experiencing intense fear and anxiety in their daily lives.

Although terms „fear” and „anxiety“ are commonly used interchangeably, they are not identical. Fear is defined as an emotional, physical, and behavioral response triggered by a threat or impending danger, while anxiety refers to a distressing, unpleasant emotional state characterized by nervousness and uneasiness, involving the anticipation of real or imagined future threats or dangers (Steimer 2002; Penninx et al. 2021). Anxiety may manifest in anticipation of a potential threat, persist beyond the resolution of a threat, or arise in the absence of a discernible threat (Barnhill 2023).

Both fear and anxiety are aversive emotions, delineating distinct attitudes towards the living environment. When an individual experiences fear, they perceive the environment as a stable construct with one or more identified threats that must be eliminated for relief. Fear, as an adaptive response to danger, is deemed appropriate for the given situation. On the other hand, when an individual grapples with anxiety, their perception of reality becomes distorted. From this vantage point, the environment transforms into a source of latent threats not yet visible but deemed inevitable. Dehasse (2001) characterizes anxiety as “a kind of chaos of the cognitive and emotional spheres”.

It is noteworthy that fear can metamorphose into anxiety if the intensity of a negative stimulus increases and coping mechanisms falter (Epstein 1971). This manifestation of anxiety, termed “phobia”, is marked by an excessive and unrealistic fear of an object, person, animal, activity, or situation (LeWine 2022). Importantly, symptoms of phobia persist long after the removal of the initial stimulus, underscoring the critical importance of diagnosing and treating fear before it evolves into phobia. It is plausible to designate phobia as “untreated fear complications”.

Table 1. Common feline specific anxiety and fear related disorders (based on Stepita 2016)

Fear of animate stimuli	Fear of inanimate stimuli	Other anxieties
– familiar and unfamiliar people – other animals	– noises – places and situations – veterinary visits	– generalized anxiety – separation anxiety

It is crucial to emphasize that specific situational fears have multifaceted impacts on feline well-being. The most common feline fears and anxieties are shown in Table 1. When a cat exhibits fear aggression, pet caregivers may experience embarrassment or fear of being misunderstood by veterinary staff. Additionally, concerns and guilt may arise when the cat inadvertently causes injury to themselves or the veterinary staff during an examination (Atkinson 2018). The stress response can also manifest in unreliable results from physical examinations and laboratory tests, such as changes in heart rate (typically increased), elevated respiratory rate, heightened urine pH, hypertension, increased blood glucose, and an elevated white blood cell count due to chronic stress. Diarrhea or stress colitis may also be indicative of heightened stress levels (Rodan and Cannon 2016).

The stress response in cats and the associated concerns of caregivers can translate into a deficiency in proper veterinary care. Substantial evidence suggests that cat owners often avoid regular veterinary visits to mitigate their pets' stress. A survey conducted among German owners (Karn-Buehler and Kuhne 2022) revealed that 65% of respondents believed their cats experienced anxiety during veterinary visits. In 50.8% of cases, veterinary visits were stressful for the cat owners themselves, and a staggering 89.1% of them endeavored to minimize visits to the veterinarian as much as possible (Karn-Buehler and Kuhne 2022). Another survey among cat caregivers in Australia and New Zealand indicated that feline stress ranked as the third primary reason for respondents avoiding visits to the veterinarian, with 23.9% of cat owners concurring with this statement (Johnston et al. 2017). A web-based questionnaire (Habacher et al. 2010) demonstrated that, for 27% of cat owners, their pets' stress played a significant role in deciding whether to pursue vaccination. The inference drawn from these findings is that veterinary visits designed to be feline-friendly not only enhance the comfort of cats but may also directly impact their overall health status. Conversely, a lack of sufficient veterinary care can lead to behaviors deemed unacceptable by caregivers, including inappropriate urination or aggression rooted in somatic issues. A 2020 report (Maxwell 2020) highlights that behavioral issues ranked as the second most common reason for the relinquishment of cats in the UK. To the best of authors' knowledge, no study has explored the perspectives of cat caregivers in Poland.

Nevertheless, in order to prevent and treat illnesses in pets, visits to the veterinary practice are inevitable. The following recommendations for diagnostics based on life stage, as prepared by the American Animal Hospital Association and the American Association of Feline Practitioners, are presented (Quimby et al. 2021):

- kitten (birth up to 1 year): fecal examination, frequency: single baseline, then as needed;
- young adult (1–6 years): complete blood count, serum biochemistry panel, urinalysis, T4, symmetric dimethylarginine, and other renal indices, blood pressure, retroviral testing, rectal examination, frequency: single baseline, then as needed;
- mature adult (7–10 years): complete blood count, serum biochemistry panel, urinalysis, T4, symmetric dimethylarginine, and other renal indices, blood pressure, retroviral testing, rectal examination, frequency: every 1–2 years;
- senior (>10 years): complete blood count, serum biochemistry panel, urinalysis, T4, symmetric dimethylarginine, and other renal indices, blood pressure, retroviral testing, rectal examination, frequency: at least yearly (every 6 months recommended).

The aim of this paper was to identify potential stimuli that evoke feline fear during veterinary visits and travel to the clinic, drawing insights from the analysis of a case study documenting the travel and veterinary visit of a 15-year-old female cross-breed cat. Furthermore, the paper

sought to articulate strategies for organizing veterinary experiences and clinic journeys that prioritize feline well-being.

CASE-STUDY

A 15-year-old indoor, neutered, cross-breed female cat, exhibiting dermatitis (characterized by intense itchiness and a substantial wound resulting from frequent scratching of the neck), was presented at the veterinary clinic in Szczecin, Poland. The cat has been deaf for the past 10 years and is also afflicted with Horner's syndrome and hyperthyroidism.

The feline shares a strong bond with its owner and tends to become calm when being petted, but this soothing effect is exclusive to the owner. The cat generally tolerates other individuals, primarily cat-sitters, although it associates them mostly with the owner's absence and unwelcome physical contact, such as the direct administration of pills twice a day. In addition to the owner, the cat cohabits with one female and one male cross-breed cat.

The described symptoms worsened during the cat owner's absence in June 2023. Following a phone consultation with the owner, a cat-sitter, responsible for twice-daily visits, contacted the veterinary clinic and scheduled the first appointment. Subsequent examinations were deemed necessary after the initial visit. The analyzed case details the travel to the veterinary clinic and the proceedings of the second consecutive veterinary visit.

The consultation was appointed for a specific hour. The journey from home to the clinic lasted approximately 15 minutes, with the cat being transported in a plastic carrier within a car. The veterinary visit spanned around 15 minutes and was preceded by a 10-minute wait in the mixed-species waiting room, lacking special perches for cat carriers. The subsequent veterinary procedures included a veterinary interview, physical examination, blood sample collection, injection of a steroid, and dressing of the wound.

Post-consultation, recommendations were conveyed to the cat-sitter in written form, and the payment was arranged in a separate room. The cat was then secured in the cat carrier. Upon returning home, the cat received a portion of food, and the cat group was observed for 15 minutes to detect any signs of non-recognition aggression, possibly related to the presence of an unfamiliar scent from the veterinary clinic. Fortunately, no disruptive incidents occurred. Table 2 presents a list of stressors identified during the travel and within the veterinary practice.

Table 2. Stressors identified during the travel and within the veterinary practice in the case study

Name of the stressor	Stressor description
Displacement from the territory	The cat was transported reluctantly from its safe and familiar territory to the veterinary practice
Unfamiliar people	The cat owner was absent at the veterinary clinic, and the cat was handled by an unfamiliar person (the veterinarian) and a familiar person associated with the owner's absence (cat-sitter)
Separation from the social group	The cat was separated from both the owner, with whom it shares a strong bond, and two other cats at home, with whom it maintains a neutral relationship, as the cat tends to avoid other pets
Rough handling (from cats' perspective)	The veterinarian performed a blood sample collection and administered a steroid injection
Change in routine	The routine was altered in two significant ways: first, by the absence of the owner, and second, by the relocation to the veterinary clinic, coupled with the necessity for fasting

Name of the stressor	Stressor description
Unpredictable environment	The cat had no control over its environment, being transported in a car within a cat carrier to the veterinary clinic. During this journey, the cat was subjected to unwanted yet essential handling
Unfamiliar scents and smells	In the waiting room, the cat was exposed to the scents of other animals
Pain and discomfort	The cat has been suffering from hyperthyroidism for a year, undergoing medication (Thiafeline). However, its T4 level remains above the norm. Symptoms of hyperthyroidism include increased thirst and appetite, as well as excessive vocalization due to hypertension. The cat is deaf and has impaired vision
Confinement	The cat was grabbed and closed unwillingly in the cat carrier

Main behavioral changes identified during the travel and within the veterinary practice in the case study (adapted from Amat et al. 2016) are presented in the Table 3 below.

Table 3. Behavioral changes observed in a female cat during travel and in veterinary practice (adapted from Amat et al. 2016)

Behavior	Changes caused by travel and veterinary visit
General activity	decreased
Play	decreased
Exploratory behavior	decreased
Facial marking	decreased
Positive interactions with other cats and with humans	decreased
Vocalization	increased
Vigilance	increased
Hiding	increased

DISCUSSION

The domestic cat is believed to have descended from the African wildcat (*Felis silvestris lybica*), which plays a dual role in the living environment as both a predator and prey (Crowley et al. 2020). Any mistake in this delicate balance can be life-threatening, leading to death from starvation or a stronger animal's attack.

In the context of feline fear of veterinary visits, it is essential to note that the process of domestication for cats is not yet complete, leading to their classification as "semi-domesticated." Unlike dogs and other domesticated animals, cats lack clear morphological, behavioral, and physiological changes compared to their wild ancestors. Furthermore, distinguishing between owned cats and feral cats is challenging, as individuals can shift between these categories over their lifetime (Crowley et al. 2020) and may even interbreed with wildcats. Ultimately, the discussed species is not strictly dependent on humans and can quickly revert to a wild state (Nilson et al. 2022).

Given these factors, it is unsurprising that modern cats react impulsively to unexpected changes. They are emotional creatures with highly sensitive senses that enable them to both hunt and escape from stronger predators. Table 4 presents a list of feline senses, with each sense analyzed from two perspectives: its usefulness for a predator and its usefulness for prey.

Table 4. The analysis of feline senses in dual perspectives: predator utility and prey adaptation (based on Platt 2006; Salaun et al. 2017; Delgado and Dantas 2020)

Name of tshe sense	Usefulness for a cat as a predator	Usefulness for a cat as a prey
Visual sense	detecting prey movements and approaching it	recognizing predator movements and retreating
Olfactory sense	smelling and tracking prey (via the main olfactory system), gathering information about rivals and other hunting cats (via the vomeronasal organ, which analyzes pheromones and scent chemicals)	detecting the scent of a predator and retreating without the necessity of a direct encounter, masking its own scent (e.g. covering urine and feces)
Gustatory sense	selecting food with high protein and fat contents	exhibiting neophobia towards new food to avoid poisoning
Auditory sense	hearing prey movements and sounds to track it	hearing the approach of a creeping predator and fleeing
Vestibular sense	controlling posture and movements to catch prey	controlling posture and movements to flee from a predator
Tactile sense	grabbing and biting prey	fleeing from a predator attempting to touch the body or grab an individual

Due to their heightened senses, cats receive more stimuli than their caregivers, resulting in a perception of danger that differs from the human perspective. To minimize potential stressors, it is crucial to identify and address them. Often, during travel and veterinary visits, multiple stressors occur simultaneously, intensifying the fear response. Jahn and DePorter (2023) compiled a list of potential stressors that cats may encounter during air travel:

- displacement from territory,
- unfamiliar people,
- separation from the social group,
- change in routine,
- rough handling,
- unpredictable environment,
- extremes of temperature,
- unfamiliar scents and smells,
- visual contact with other animals,
- pain and discomfort,
- lack of resources,
- bright and harsh lights,
- confinement,
- loud and unpredictable noises.

All the stressors mentioned above can apply to cats during travel and veterinary visits. Less obvious stressors include extremes of temperature (e.g. travel by car/bus without air-conditioning) or bright and harsh lights (e.g. travel by car/bus at night). An additional stressor related to veterinary clinic visits can be pre-procedure fasting (Taylor et al. 2022), as well as contact with unfamiliar objects and various examinations, including injections and blood tests.

The well-being of a cat, both physically and emotionally, is inherently connected to its comfort within its environment. Establishing a foundational understanding of a cat's species-specific environmental requirements and its interaction with its surroundings is crucial for addressing fundamental needs. It is not optional but essential to attend to these environmental needs for the cat's optimal well-being. These needs include not only the cat's

physical surroundings, whether indoors or outdoors, at home or in a veterinary practice, but also extend to factors influencing social interactions and responses to human contact (Ellis et al. 2013). Taylor et al. (2022) have proposed guidelines focused on five primary concepts ("pillars") that serve as the foundation for creating a healthy feline environment. Familiarity with these principles and an understanding of the cat's unique environmental needs can aid veterinarians, cat owners, and caregivers in alleviating stress, reducing the occurrence of stress-related disorders, and managing undesirable behavior in their feline patients and pets. An analysis of a case study documenting the travel and veterinary visit of a 15-year-old female cross-breed cat, based on the five pillars of a healthy feline environment (Taylor et al. 2022) is presented below:

1. Provide a safe place
The cat was transported in a solid plastic carrier, which was covered with a blanket to reduce stimuli. To minimize unwanted handling at home (while placing the cat in the carrier), all doors were closed, and hiding places were blocked. Although these actions involved a temporary disruption of a healthy cat environment, they not only expedited the process of placing the cat in the carrier but also prevented the cat from getting stuck under furniture. The cat, being dear to its owner, did not hear dog barking in the waiting room, thereby limiting the number of negative stimuli in the veterinary clinic.

2. Provide multiple and separated key environmental resources (food, water, resting areas, perches, scratching areas, litterboxes/trays and play opportunities)
During short journeys and brief veterinary visits, certain resources such as food, water, and litterboxes were not applicable. The cat's travel time to the veterinary clinic was approximately 15 minutes, and there were no designated perches for cat carriers in the waiting room.

3. Provide opportunity for play and predatory behavior
The visit was short, as the cat froze, showing no interest in interacting with the environment, no toys were offered. Previously the cat had shown no motivation for food when stressed, moreover before blood collection the cat had to fast, so treats were not provided. Recognizing that cats play both predator and prey roles in nature, the carrier was covered to prevent observation by other animals and unfamiliar people in the veterinary clinic, as this could be interpreted as stalking, aligning with normal hunting behaviors of cats (International Cat Care 2019).

4. Provide positive, consistent, and predictable human-cat social interaction
In adherence to the Cat Friendly Veterinary Interaction Guidelines: Approach and Handling Techniques (Rodan et al. 2022), the cat experienced a sense of control and choice during interactions with the veterinarian. The cat was not picked up, and all examinations took place within the cat carrier. The veterinarian's gestures and vocalizations were calm and predictable. Tactile interactions, involving wound disinfection and injection, were conducted after all necessary equipment was prepared in the examination room. Administrative procedures, including payment, took place outside the examination room while the cat was still in the carrier. Throughout the visit, the cat exhibited freezing behavior, with the absence of the owner being notable. The owner reported that, typically, after subtle interaction with the owner (such as petting or massaging motions), the cat begins to calm down, muscles relax, and occasional purring occurs.

5. Provide an environment that respects the cat's sense of smell and other senses
Before the visit, the carrier was covered with a blanket, limiting scents, smells, and sights that could trigger the cat's fear. No synthetic feline pheromones were used in diffusers or sprays. It is worth noting that feline facial pheromone F3 has been developed for environmental applications to reduce stress (Zhang et al. 2022). However, there is a subject of dispute regarding whether pheromone products are specifically effective for hospitalized veterinary patients (Riemer et al. 2021).

Additionally, no overwhelming smells, such as perfumes or chemicals, were present. Upon returning home, the cat group was observed for 15 minutes to detect any signs of non-recognition aggression related to the unfamiliar scent from the veterinary clinic.

Adopting recommended practices (ISFM 2021), based on the five pillars of a healthy feline environment similarly as outlined above, can contribute to a positive and stress-free experience for cats during travel and veterinary visits, promoting their overall well-being.

In a veterinary setting, a majority of cats exhibit fearfulness, and a cumulation of stressors can lead to aggressive behaviors. Additional suggestions (adapted from Riemer et al. 2021) regarding low-stress veterinary experiences are presented below:

- environmental adaptations (e.g., barriers reducing visual contact and elevated spots for cat carriers in the waiting room, non-slip mats in the examination room),
- increase in low-stress handling approaches (e.g., allowing the cat to remain in the bottom of the carrier during the examination, using high-value treats if possible, conducting examinations with the owner present),
- desensitization/counterconditioning (e.g., carrier training, cooperative care training),
- restraint methods (use of towels, blankets),
- tactile stimulation preceding injections (tickling, light tapping, or massaging),
- pre-visit anxiolytic medication administered by the owner,
- music therapy with the use of feline-specific music, e.g., by David Teie (Hampton et al. 2020; Paz et al. 2022).

With regard to this specific case study, selected solutions could be implemented. Elevating spots to increase distance from potential stressors (such as other animals) and using non-slip mats in the examination room can improve the cat's stability. A long-term approach involves desensitization and counterconditioning techniques. It is advisable for training sessions to initially involve only the cat's guardian, then include a cat-sitter or someone familiar to the cat if possible, and finally progress to sessions without the guardian present, as the absence of the owner can be an additional stressor for the cat. While pre-visit anxiolytic medication was not administered, orally administered pregabalin, approved for cats to alleviate acute anxiety and fear associated with transportation and veterinary visits (Lamminen 2023), could also reduce stress. Since the cat is deaf, music therapy was not applicable in this case.

CONCLUSIONS

This study investigates the factors that induce fear in cats during veterinary visits and travel, using a case study of a 15-year-old female cross-breed cat with dermatitis. The study outlines the travel and veterinary visit experiences, identifying stressors such as displacement, unfamiliar people, separation from the social group, rough handling, changes in routine, unpredictable environment, unfamiliar scents, pain, discomfort, confinement, and associated changes in the cat's behavior changes in the cat's behavior. The paper provide insights into

organizing veterinary experiences that prioritize feline well-being and suggests strategies based on the observed stressors and behavioral changes. It is crucial to acknowledge that cats are unique individuals, and each case should be approached individually. In other words, methods to mitigate stress should be carefully chosen for each specific cat. Future research is necessary to explore both caregivers' experiences with cat stress and anxiety during veterinary visits and the feasibility of implementing stress reduction strategies in veterinary practices.

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BEZPIECZNE I PRZYJAZNE KOTOM WIZYTY W GABINECIE WETERYNARYJNYM ORAZ PODRÓŻE DO GABINETU WETERYNARYJNEGO: OPIS PRZYPADKU

Streszczenie. Coraz większa popularność kotów domowych jako integralnych członków rodziny wzmaga potrzebę zrozumienia i troski o ich dobrostan podczas podróży i wizyt weterynaryjnych. Pomimo rosnącej świadomości dotyczącej kocich zachowań i emocji nadal istnieje znaczna luka w rozumieniu niuansów komunikacji między człowiekiem a kotem oraz rozpoznawaniu potencjalnych stresorów, z jakimi koty mogą się spotkać w placówkach weterynaryjnych. Niniejszy opis przypadku analizuje doświadczenia 15-letniej kotki mieszańca podczas wizyty weterynaryjnej, rzucając światło na bodźce wywołujące koci strach. Kluczowym celem tego badania była identyfikacja powszechnych kocich lęków i obaw oraz podkreślenie ich potencjału w zakłócaniu opieki weterynaryjnej i przyczynianiu się do unikania rutynowych wizyt przez opiekunów. Opierając się na zalecanych praktykach i pięciu filarach zdrowego środowiska dla kotów, w artykule zaproponowano strategie sprzyjające pozytywnym i bezstresowym doświadczeniom podczas wizyt weterynaryjnych i podróży. Podkreślona została konieczność dalszych badań w celu poznania wiedzy opiekunów na temat stresu u kotów podczas wizyt weterynaryjnych oraz możliwości wdrożenia strategii redukcji stresu w gabinetach weterynaryjnych.

Słowa kluczowe: dobrostan zwierząt, strach, lęk, stres, postępowanie przy niskim poziomie stresu, zachowanie, behawior kotów.