

# A Comprehensive Study on Homeowner Stress and Epileptic Cat Well-being

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## Abstract

The most prevalent neurological ailment in cats to be documented is epilepsy. Treatment for recurrent seizures includes giving anti-epileptic medications several times a day. Cats and their owners could be impacted by epilepsy treatments. The purpose of the study was to evaluate the care burden and quality of life (QOL) for cat owners who had epilepsy. The Cat Owner Relationship Scale (CORS) and Zarit Burden Interview (ZBI), validated measures of Cat QOL and demographic data were combined to generate a survey via the internet. With SPSS 26, regression analysis was performed. 6 states and 67 owners in India finished the responses. Cats with epilepsy that began before the age of five, controlled seizures and no drug side effects had improved QOL. Owners of cats with controlled seizures who were over 55 and felt supported by their veterinarian had reduced ZBI. Significant correlations were found between lower owner ZBI, greater cat QOL and higher CORS. The effects of epilepsy on cats and their owners could be lessened by effective seizure control and strong bonds between cat and owner. It is necessary to conduct further research to comprehend the interactions between cats and their owners to manage cats' epilepsy.

**Keywords:** Cat-Owner Connection, Feline Epilepsy, Human-Animal Communication, Cost Of Care

## INTRODUCTION

Around 1638 people were living in 597 occupied homes in the town at the time of the tragedy. Coordinating the community's response to the flood's impacts is the duty of the local civil defense group, which is governed by the Whakatane District Council (1). The world is getting more urbanized, which has implications for environmental and human welfare as well as opportunity. By 2050, more than two thirds of people on Earth are expected to reside in urban regions, making urban land, the land use category with the greatest rate of expansion. Cities are intricate social-ecological systems defined by high population concentrations and human community-supporting infrastructure (2). The quick spread of virus has unavoidably made people nervous and filled them with a great deal of doubt. The public gets exposed to this contagious new virus, which poses a risk to their bodily and emotional well-being that might cause irreversible harm (3). The foundation of animal-aided interventions (AAI) is the study of anthrozoology, or the relationships and interactions between humans and non-human animals that are cognitively and emotionally capable (4). In veterinary dermatology, there is a focus on the client or owner's well-being, particularly the assessment of their Quality of Life (QoL). Considering the client's experience could be beneficial, even though patient care remains the top concern because many skin conditions in companion animals require continuous client care (5). Stress is used in the field of biology to refer to a range of physiological and behavioral changes that are triggered by unpleasant or noxious stimuli. The two primary components of the stress response are generally recognized to be the Hypothalamic-Pituitary-Adrenal Axis (HPA) and the sympatho-adreno medullary system (6). In small animal veterinary practice, caregiver load has been acknowledged by an increasing body of research. The term caregiver burden describes the variety of complex difficulties that a person could have

when tending to a sick family member. In conventional veterinary clinics, clients who own companion animals that are chronically or terminally sick bear a heavier caregiver load compared to those who own healthy pets (7). QoL is used to evaluate an individual's general state of well-being and indicates how much they appreciate their life. In the medical field, quality of life is assessed in relation to the detrimental effects of the condition (8). People have shared a close, loving relationship with *Felis catus* all across the world. To decrease the rate of cat abandonment and increase the QoL for these animals by better understanding the affective bond between cat owners and their pets, as well as to give Brazilian professionals and researchers a validated tool (9). The fast-paced nature of contemporary life causes a great deal of loneliness and social anxiety among single people. Having a pet is one way to help with the increasing psychological problems that our society is facing. Nevertheless, the amount of time that people and pets spend together is restricted because of work and other responsibilities in life, which means that the pets spend a lot of time by themselves at home. Pets experience psychological stress as a result of this as well as in extreme circumstances, symptoms like depression and separation anxiety might arise (10).

The study (11) examined the association between play and four welfare outcome variables in felines (*Felis catus*): the frequency of problematic behavior, the cats' quality of life, the quality of their connections with their guardians and behavioral modifications. Demographic data, segments with free text, questions about resources and play, yet the following verified metrics were used to create an online survey: Cat QOL, the adult playfulness characteristic scale and the cat owner relationship scale. While pet owners could feel less lonely than non-owners, the study suggests that they might potentially suffer more psychologically (12). Two tasks, one emulating daily cat communication and the other requiring no contacts, were completed by them on different days in their homes. Salivary cortisol as well as oxytocin levels in owners was measured using the enzyme-linked immune-sorbent assay along with the Two-Dimensional Mood Scale Emotions were measured using short-term before and after each condition (13). The study (14) addresses how different preanalytical and analytical conditions could affect the measurement of enzyme activity. The etiology and therapeutic use of different serum enzymes in canine and feline medicine are covered. The study (15) includes Temporal lobe epilepsy (TLE) in the classification of veterinary epilepsy in addition to summarizing the clinical characteristics and potential cause. Cat epilepsies are divided into three categories: idiopathic epilepsy, structural epilepsy and unknown origin. As a syndrome linked to a topographic connection with a specific anatomical brain structure rather than an aetiologic category, TLE appears to fall outside of this classification. The study (16) explained feline epilepsy syndrome, pathology associated with epilepsy, the availability and indications of neurosurgery for cats with various forms of epilepsy, such as corpus callosotomy, lesionectomy, as well as temporal lobectomy with hippocampectomy. Reactive Seizures (RS), intoxication was the most reported reason. Clinicians should assume poisoning whenever other potential causes of RS have been ruled out, sufficient historical discoveries have been obtained, the cat is overlooked by the owner, epileptic seizures are controlled by symptomatic treatment and seizures do not recur after treatment is stopped (17). A cohort of British Shorthair (BSH) cats was analyzed to assess the incidence of epileptic episodes and likely idiopathic epilepsy (18). The study (19) looked into the frequency and clinical features of side effects linked to phenobarbitone in cats with epilepsy. Cats that satisfied the inclusion criteria phenobarbitone medication, epilepsy diagnosis and availability of follow-up data regarding side effects were located by looking through the medical records of two veterinary referral clinics from 2007 to 2017.

## **MATERIALS AND METHODS**

This section covers a thorough investigation into the relationship between homeowner stress and the wellbeing of epileptic cats. In total, 67 cats experienced seizures. However, it was found that 12 cats had reactive seizures as a result of metabolically hazardous aetiologies and they were eliminated. When 35 cats were first admitted to the hospital, either because of cerebral pathology or at the owners' request, they were put to death. Further medical records and follow-up data revealed that four of the cats were ruled out as having structural epilepsy. There were

three entire, thirty-five neutered, six intact and thirty-two spayed females, with an equal number of males and females.

### **Creation of a survey**

An electronic version of the survey was tested prior to its release to the public. Veterinarians that specialize in feline and canine epilepsy as well as a small group of cat owners with epilepsy collaborated to construct the survey. The resultant open survey had 99 questions and it was expected to take 20 to 30 minutes to complete. The survey asked questions about demographics, the medical history of the cat and four validated measures. Every validated measure that was employed underwent an earlier, distinct process to establish its validity. The participant did not need to answer any questions to submit their survey. Before submitting, participants could go back and edit their responses using the back button. The final analysis included participants who answered all of the verified measures' questions.

### **QOL in cats with long-term diseases**

Cat QOL was evaluated using the QOL measure for chronically ill cats. The QOL measure consists of inquiries about the health, comfort and emotional state of the cat, including please rate how accurately the following word captures the current state of your cat: Active, with response counts varying from one to six. Higher scores indicate greater QOL. The responses were mathematically converted to a range of 0 to 6 so that they could be compared to earlier research. Measures to reverse code were done prior to analysis.

### **ZBI Method**

ZBI was adjusted for usage with pet animals and utilized to measure the workload of caregivers. The range of answers to the questions was 1 to 4. To compare the results with earlier research, the answers were mathematically converted to fall between 0 and 4. The ZBI asks about the real-world effects of providing care as well as the owner's experiences with feelings like guilt, rage and terror.

### **Questionnaire**

For instance, "Do you feel that you don't have enough time for yourself because of the time you spend with your pet?" along with "Are you worried about your pet's future?" Higher scores indicate a bigger burden of care. The range of scores is 0 to 85. A cumulative score of greater than 20 on the original, unadapted ZBI denotes a clinically substantial amount of load. Analysis was conducted after reverse coding.

### **Benefits of the survey on caregiving**

The good Aspects of Caregiving survey was used to gauge owners' good experiences providing care. There are nine questions in this survey and the item answers range from 0 to 4. Taking care of my cat has raised my self-esteem. Higher scores denote a more positive experience. The total values range from 0 to 36. This instrument's Cronbach's alpha was 0.91.

### **Owner-to-owner ratio of cats**

The 33-item questionnaire, which was adapted from the "Monash Dog-Owner Relationship Scale", has been developed to use with cats. Three subscales comprise "the Cat Owner Relationship Scale (CORS)" evaluation of the quality of the cat-owner relationship: perceived emotional intimacy, perceived costs and cat-owner interactions. Higher scores indicate a closer relationship between the owner and the cat. Measures to reverse code were done prior to analysis. For this instrument, the Cronbach's alpha was 0.84.

### Statistical evaluation

The study population was described using SPSS 26, regression analysis. There are two types of seizure control: well-controlled and poorly-controlled. Less than one seizure per month was considered a managed seizure, whereas one or more seizures per month were considered a poorly controlled seizure. The construction of a correlation matrix, each confirmed measure was assigned a Pearson correlation coefficient. Ultimately, ZBI and QOL were included as dependent variables in two general linear models. By employing backwards elimination, non-significant components were eliminated. P-values less than 0.05 were regarded as significant. An Internet Protocol check revealed duplicate entries from the same user. The form with the highest completion rate was kept in the dataset while the other was deleted when an IP address was used more than once. The study included participants who finished the validated exams.

### RESULTS AND DISCUSSION

Survey responses came from 67 persons. Table (1) displays characteristic data derived from an online poll of cat owners who have pets and who are prone to seizures.

**Table (1).** Characteristics from an online survey of cat owners who have experienced seizures

(Source: Author)

| Factors                          | Age                            |                                  |                           |                                |
|----------------------------------|--------------------------------|----------------------------------|---------------------------|--------------------------------|
|                                  | 56+year, 29.8%<br>(20)         | 36-55 year 40.2% (27)            | 19-35 year, 29.8%<br>(20) | -                              |
| Cat sex                          | -                              | Male 52.2%<br>(35)               | Female, 47.7%<br>(32)     | -                              |
| Cat current age                  | 6+ years, 25.7%<br>(17)        | >2-6 years, 29.8%<br>(20)        | 0.2 years, 43.9%<br>(29)  | -                              |
| Duration of seizure history      | 6-7years, 20%<br>(10)          | 1-5 years, 30%<br>(15)           | < 1 year,30%<br>(15)      | 9+years, 20%<br>(10)           |
| Owner gender                     | Non-binary 28.3%<br>(19)       | Male 29.8%<br>(20)               | Female, 38.8%<br>(26)     | Prefer not to say, 2.9%<br>(2) |
| People in household              | Three-person,<br>23.8%<br>(16) | Two-person, 29.8%<br>(20)        | One-person, 28.3%<br>(19) | 4+persons,17.9%<br>(12)        |
| Cat breed                        | -                              | Other, 19.5%                     | DSH/DLH, 82.7%            | -                              |
| Age at which a cat has a seizure | 6+years, 30%<br>(15)           | >7+months-5 years, 30%<br>(15)   | 1-7 months 40%<br>(20)    | -                              |
| Seizure Control                  | -                              | Poorly controlled, 42.8%<br>(24) | Controlled 39.2%<br>(22)  | -                              |

### Cat Quality Of Life

Table (2) shows that cats with well-controlled seizures and no adverse pharmacological side effects had better QOL, even if the seizures began beyond the age of five.

**Table (2).** ANOVA for QOL scores in seizure-affected cats

(Source: Author)

| Parameter                          | QOL Range | QOL Mean | CI (94%) | p-value |
|------------------------------------|-----------|----------|----------|---------|
| Side effects of medication         | -         | -        | -        | <.001   |
| Negative consequences (30)         | 30- 58    | 23       | 50-66    | -       |
| No adverse effects (29)            | 10-45     | 43       | 55-67    | -       |
| Age at which seizures first appear | -         | -        | -        | .020    |
| 0–6 months (20)                    | 33-50     | 46       | 50-66    | -       |
| 6+ months–5 years (19)             | 10.7-30   | 56       | 51-61    | -       |
| 5+ years (20)                      | 23-40     | 52       | 57-65    | -       |
| Seizure control                    | -         | -        | -        | 0.001   |
| Poorly controlled (30)             | 23-65     | 45       | 58-66    | -       |
| Controlled (38)                    | 34-62     | 35       | 42-63    | -       |

Table (3) displays the findings of an investigation using a general linear model of the factors related to QOL scores. Elevated QOL ratings in cats were associated with improved seizure control, less adverse effects from AEDs, starting age of less than five years, as opposed to more than five years and increased CORS score.

**Table (3).** Quality Of Life in epileptic cats

(Source: Author)

| Factor                              | Ratio | Average error | Significance |
|-------------------------------------|-------|---------------|--------------|
| Inadequately managed seizures       | -     | -             | -            |
| Controlled seizures                 | 8.7   | 4.6           | .034         |
| Adverse effects                     | -     | -             | -            |
| No medication adverse effects       | 16.3  | 4.7           | <.001        |
| Age at which seizures first appear  | -     | -             | 0.20         |
| 0–6 months                          | 12.9  | 6.7           | .05          |
| 6+ months–5 years                   | 18.3  | 6.2           | .002         |
| Covariate                           | -     | -             | -            |
| Cat Owner Relationship Scale (CORS) | .45   | .14           | .002         |
| 5+years                             | -     | -             | -            |

### Owner's duty of care

Table (4) shows that there was less of a care for owners of cats with managed seizures who were over 55, had seizures for more than eight years and believed their veterinarian was there to help. The foundation for these conclusions is the ZBI univariate analyses of variance. An analysis of cats with controlled seizures revealed that owners who were older, had a longer seizure history, had tighter CORS scores and had access to veterinary care had a reduced care burden.

**Table (4).** Scores on the ZBI for owners of epileptic cats

(Source: Author)

| Factor                        | ZBI range | ZBI mean | CI (95%) | p-value |
|-------------------------------|-----------|----------|----------|---------|
| Veterinary support            | -         | -        | -        | <0.001  |
| Supported (32)                | 1-40      | 16       | 14-18    | -       |
| Not supported (22)            | 1-42      | 26       | 20-31    | -       |
| Length of the seizure history | -         | -        | -        | .002    |
| Not more than a year (10)     | 4-38      | 20       | 16-23    | -       |
| 1-4 years (14)                | 1-42      | 19       | 16-21    | -       |
| 5-7 years (21)                | 2-29      | 15       | 11-18    | -       |
| 8+ years (15)                 | 1-22      | 9        | 5-12     | -       |
| Seizure control               | -         | -        | -        | <.001   |
| Poorly controlled (39)        | 1-40      | 20       | 18-23    | -       |
| Controlled (20)               | 1-39      | 14       | 11-16    | -       |
| Owner age                     | -         | -        | -        | .002    |
| 19-35 (20)                    | 5-41      | 20       | 17-23    | -       |
| 36-55 (15)                    | 1-39      | 17       | 15-20    | -       |
| 56+(15)                       | 1-42      | 12       | 8-15     | -       |

## DISCUSSION

Effectively treating feline epilepsy as well as assisting their owners depends on examining the factors impacting these cats' quality of life and the level of care they require.

The existence or lack of negative effects from AED was another element linked to cat quality of life. The absence of unfavorable effects was found to improve QOL scores. The present discovery aligns with earlier research that demonstrated comparable relationships between the negative consequences of AEDs and dog owners' assessments of their QOL. Lethargy, vomiting, ataxia, diarrhea, personality changes, hyper salivation, excessive thirst and loss of appetite are common side effects of AEDs. The QOL score was correlated with the cat's age at the beginning of the first seizure. A better quality of life was associated with epilepsy when it first manifested between the ages of 3 months and 2 years, as opposed to 6 years or later. When compared to onset after five or more years of age, onset before six months of age was likewise linked to a higher QOL. This discrepancy could be the result of a correlation between the various causes of epilepsy and age at onset. An owner burden of care measure makes this study distinct. According to the data, 33% of respondents scored higher than the recommended clinical burden cutoff threshold of indicating that cat owners with epilepsy bear a heavier care load. Owners of cats with poorly treated seizures report much higher ZBI scores; this could be explained by the irregular nature of their seizures, the symptoms they cause and the disruption they cause to their lives.

ZBI ratings were found to be correlated with the owner's perception of the veterinarian care provider's assistance. A prior study where owners discussed the value of regular contact and assistance from their veterinarian in easing their dog's epilepsy-related fear lends credence to this conclusion, a major factor in reducing the strain on caretakers of human family members is medical professionals' assistance, which includes thorough information about symptoms, treatments and prognoses. Owners who reported that they are between the ages of 19 and 35 had considerably greater ZBI than those who were older than 55. Conflicting findings were found in earlier research on carers of



human family members. Older caregivers reported a higher care load, despite some research finding no evidence that caregiver age predicts caregiver burden. These researches support the results of the current study, which show that younger caregivers experience a greater care burden.

“Cat QOL and owner ZBI scores” were associated with the CORS-identified cat-owner relationship. Research on human caregiver relationships supports this, demonstrating that better outcomes are seen by care receivers receiving care from a close, relationship-based caregiver. Close relationships between cats and their owners could provide frequent opportunities for good interactions, more attention to daily diet and health and additional life enrichment, all of which contribute to the higher QOL scores seen in this study. A decline in owner ZBI ratings was similarly linked to higher CORS. Studies on human caregivers have validated this conclusion, showing that lesser caregiver load is correlated with tighter connections. Owners who have a deep relationship with their feline could benefit psychologically from cat companionship more than others. They could feel less hostility toward their feline because these owners are more likely to provide their animal with the best care available.

## CONCLUSION

Cats and their owners are affected by the chronic, deadly illness known as feline epilepsy. This study aimed to evaluate the impact of epilepsy on the QOL and level of care needed by cat owners. The outcomes were correlated with improved seizure management, stronger relationships between owners and cats, higher quality of life for cats and the quantity of care required from owners. The goal of future research should be better to understand how epileptic cats can regulate their seizures. More research is necessary to understand how cat-owner connections affect the experiences of both cats and owners. Empirical investigation into cats' QOL in a greater research population and in-depth interviews with the owners might be useful in gaining further insight into the elements influencing the QOL of cats with seizures as well as the responsibility that those who own them experience.

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