



# What External Factors Affect Feline Chronic Kidney Disease?

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## INTRODUCTION

**Feline Chronic Kidney Disease (CKD)** is a very common, life-threatening disease in cats, affecting **1-3%** of the general population, and **30-40%+** of cats over 10. It progresses silently and is often not detected until advanced stages, early detection and prevention are critical. This study examines external factors that may influence CKD risk, including age, diet, environment, water quality, and socioeconomic status. By combining survey data, veterinary interviews, and existing research, this project aims to identify patterns that can help improve feline health and longevity.

## RESEARCH METHODOLOGIES

### Methods:

- **Type of Study:** Observational, mixed methods (quantitative and qualitative)
- **Sample:** 21 cats (9 with CKD, 12 that are 10+ years old without it), Laguna Beach area
- **Data Collection:**
  - Owner surveys (diet, age, environment, vet care, etc.)
  - Interviews with 2 veterinarians
  - Meta-analysis of published studies
- **Analysis:**
  - Compared CKD vs non-CKD groups
  - Looked for patterns in age, diet, body condition, and lifestyle
  - Compared published studies to each other and my own findings
- **Additional Research:**
  - Evaluation of commercially available cat foods

## DISCUSSION, ANALYSIS, AND EVALUATION

### Discussion/Analysis:

- **Age Association:** CKD appears to be a multifactorial disease, with age as the strongest predictor and was consistent across all data, but is not the sole cause
- Survey results aligned with research and veterinary interviews, especially regarding age and inflammation as key contributors
  - Some studies suggest that inflammation can damage blood vessels, which reduces blood flow to the kidneys and can lead to CKD
- Factors such as sex (*Figures 2 & 3*), water quality (*Figure 4*), and environment showed possible trends but lacked consistent evidence, across all studies, suggesting they may interact with other variables rather than act independently
- Diet type (wet vs. dry) showed no clear relationship, though nutrient composition (specifically phosphorus and protein) was emphasized

### Evaluation (Limitations)

- Small sample size (21) limits reliability and generalizability
- Self-reported data → possible inaccuracies (diet, water, etc.)
- Limited geographic range (potential environmental bias)
- Important factors (dental health/inflammation) not directly measured

## DATA AND FINDINGS

Figure 1: Vet Visit Prevalence in cats with and without CKD

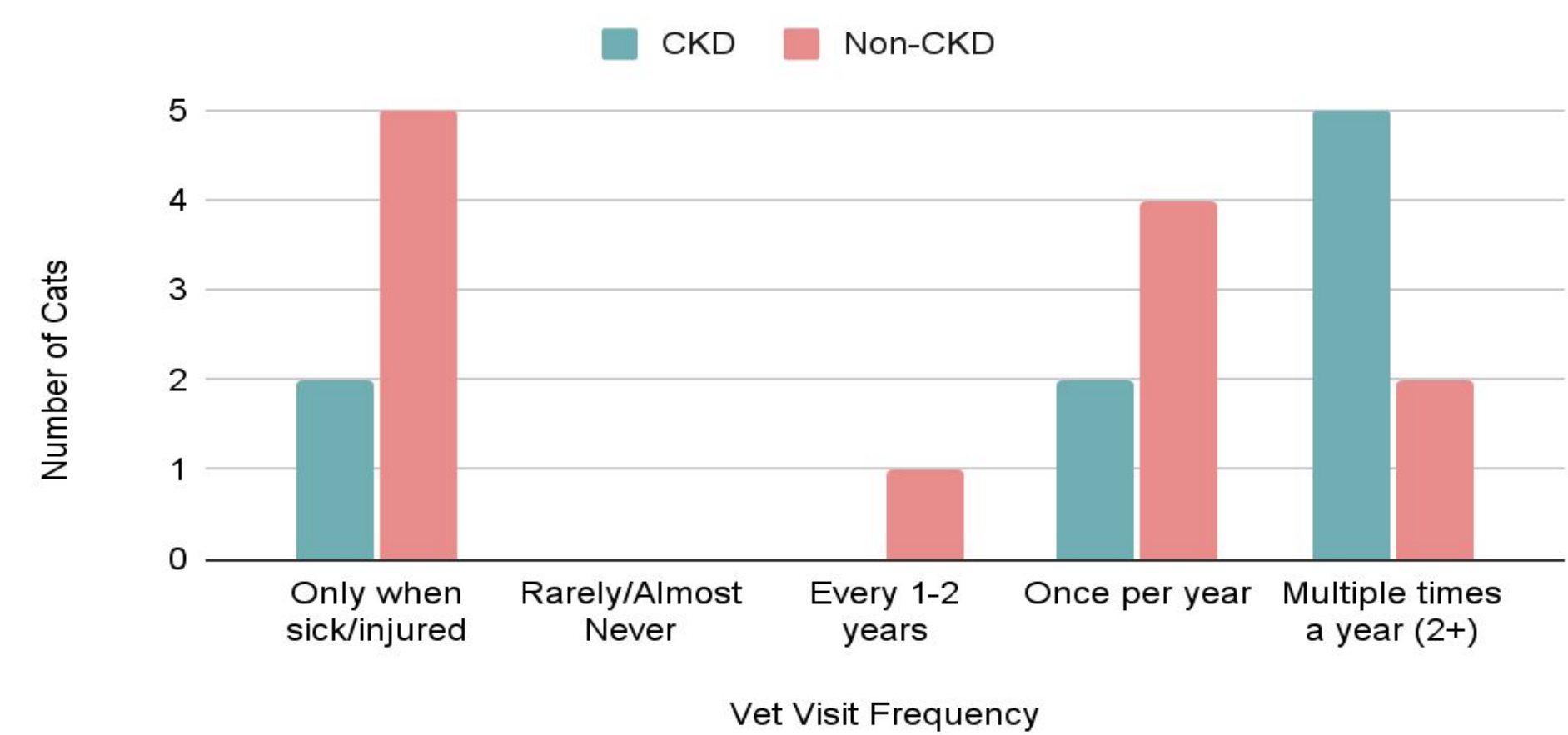


Figure 1: Veterinary care plans were mixed: Cats with CKD were more likely to have frequent vet visits, likely reflecting increased diagnosis. Non-CKD cats showed more variation in vet visit frequency.

Figure 2: Cats With CKD

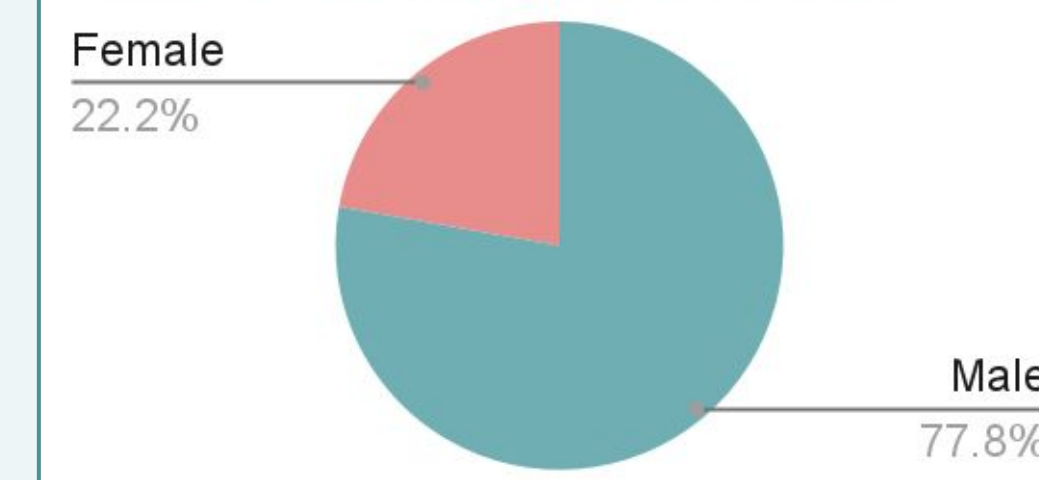


Figure 3: Cats Without CKD

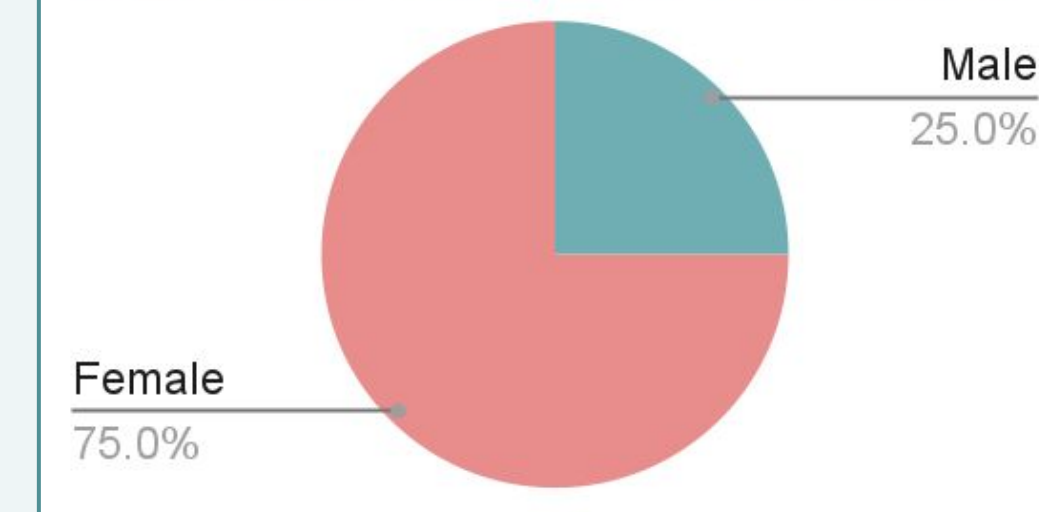


Figure 2 & 3: A higher proportion of CKD cats were male, suggesting a possible association.

Figure 4: Water Type in Cats With

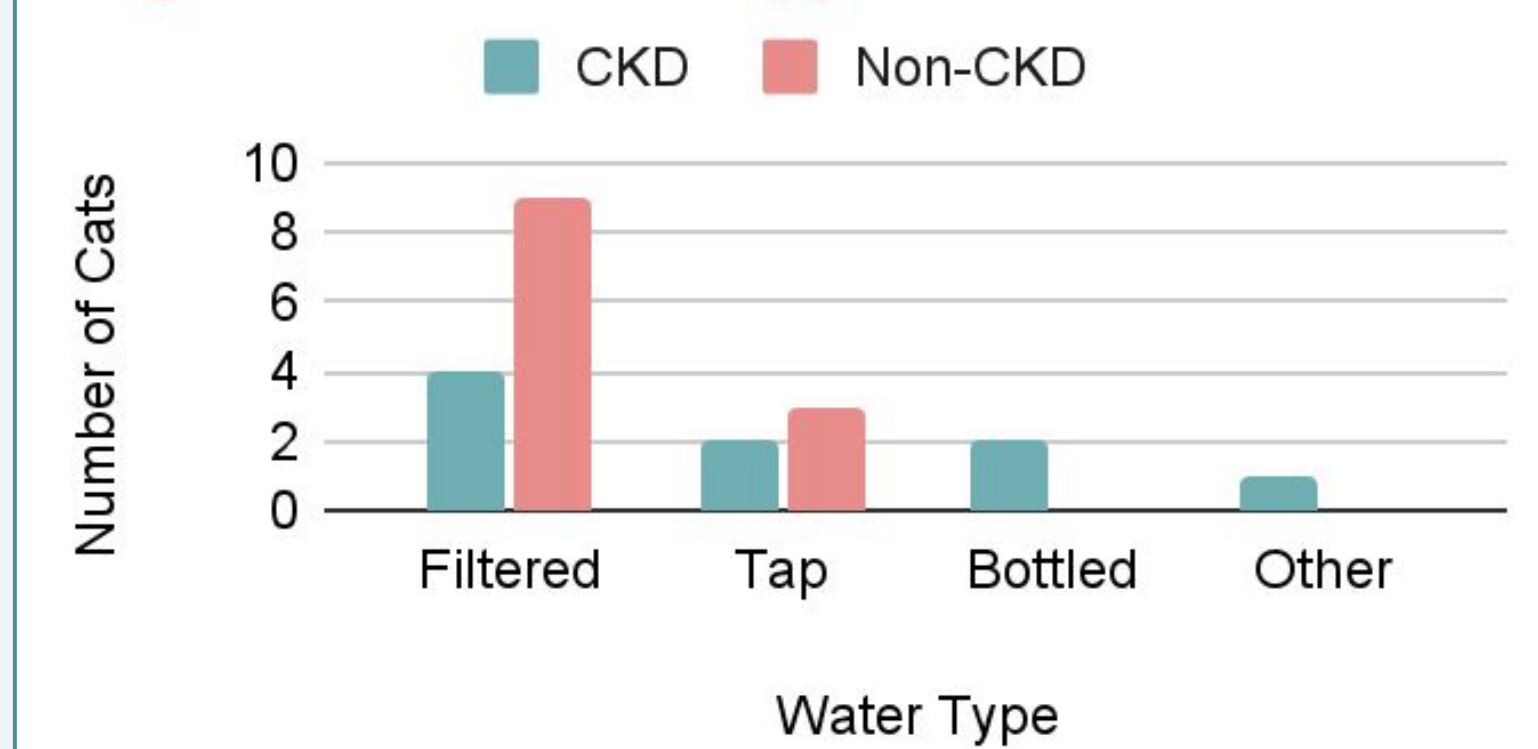


Figure 4: Filtered water was more commonly reported among non-CKD cats, suggesting a possible (but inconclusive) protective trend.

### Key Findings From The Survey:

- **Age Association:** All cats with CKD were over the age of 10, though many non CKD cats were also in this age
- **Body condition scores differed between groups:** Cats with CKD tended to have lower body condition scores ranging from 1-3. Non-CKD cats were mainly 3-5. This suggests that CKD is associated with lower body condition, likely due to disease progression rather than being a cause.
- **No Clear relationship was found for breed, wet vs. dry diet, environments, or pollution exposure (survey and literature):** Both CKD and non-CKD cats showed mixed distributions for these categories, though geographic bias may be present.

- **Prior owner awareness of CKD was generally low for both**

### Main Findings from Literature and Vet Interviews:

- Periodontal disease and inflammation were identified in the literature and interviews as major contributors to CKD
- Diet type (wet vs. dry) showed no clear pattern in existing research

## CONCLUSIONS, IMPLICATIONS, AND NEXT STEPS

### Conclusions:

- CKD is strongly age and gender associated but not caused by age alone
- Inflammation (especially periodontal disease) is a key contributing factor supported across sources
- Other factors remain controversial across sources or are inconclusive

### Implications/What Should you do?:

- Emphasizes importance of early detection in aging cats
  - **Schedule regular visits** and bloodwork for aging cats to monitor their kidneys
- Highlights need for owner education on CKD and symptoms
- Suggests veterinary-guided diets are more effective than standard retail options (and there are very few over the counter kidney supportive diets)
  - **Pay attention to quality of food, presence of minerals in water,** and nutrient content rather than moisture content alone (although it's important that your pet is **hydrated too**)
- Preventative care (dental health, regular checkups) may slow progression
  - **Prioritize dental health,** possibly try to introduce an oral routine for your pet. (There are rinses, toothpastes, water additives, dental diets, and more alongside professional cleanings)

### Next Steps for further studies:

- Increase sample size and include more diverse populations
- Use veterinary records for the sample of cats used instead of just self-reported data
- Study inflammation and dental disease more directly
- further research nutrients and water quality

## ACKNOWLEDGEMENTS & REFERENCES

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Other references are included in my paper (QR code below) in the "Works Cited" section!

