

Prevalence and Zoonotic Risk of Common Pathogens in Stray and Pet Cats in Aqaba, Jordan

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Abstract

This study aimed to investigate the prevalence of zoonotic pathogens in both stray and pet cats in Aqaba, Jordan, and to assess their potential risk to public health. Farther, the research was conducted at Aqaba veterinary clinic in collaboration with Aqaba medical Sciences University. A total of 60 cats were examined through clinical assessment and laboratory testing, including serology, PCR, and fecal diagnostics. Pathogens screened included *Toxoplasma gondii*, *Bartonella henselae* (cat scratch disease) and dermatophytes. Results revealed a high prevalence of *T. gondii* (46.7%), *B. henselae* (31.7%), and dermatophytes (25.0%) with other pathogens also present in notable proportions. The findings underline the necessity of veterinary surveillance and public health awareness in the region. Through physical examination, serological testing, and owner surveys, the study reveals patterns of zoonotic exposure that could significantly affect public health strategies in urban environments. The results highlight the greater risk posed by stray cats, emphasizing the need for public awareness and community veterinary programs.

Keywords: Zoonotic diseases, Stray cats, Pet cats, *Toxoplasma gondii*, *Bartonella henselae*, Dermatophytes, Public health.

INTRODUCTION

Zoonotic diseases transmitted from companion animals, particularly cats, to humans represent a significant public health concern. Cats, both stray and domestic, have long been recognized as potential reservoirs of several zoonotic agents. Cats can harbor a range of bacterial, parasitic, and fungal pathogens that are transmissible through direct contact, fecal-oral routes, or vector-borne mechanisms. The city of Aqaba, Jordan, with its mixture of urban and free-roaming cat populations, presents a suitable environment for the transmission of such pathogens. Close human-cat interactions raise concerns regarding the risk of disease transmission. Despite this, there is limited regional data on feline zoonoses in Jordan. This study seeks to bridge this gap by investigating the prevalence of key zoonotic pathogens among cats in Aqaba. Common zoonotic infections associated with cats include toxoplasmosis, caused by the protozoan *Toxoplasma gondii*, cat-scratch disease caused by *Bartonella henselae*, and dermatophytosis, a fungal skin infection. This paper aims to assess the prevalence of these diseases among cats in Aqaba and explore potential health risks to humans living in the same environment.

MATERIALS AND METHODS

A cross-sectional study was conducted in Aqaba veterinary clinic in Aqaba during the first half of 2025. Sixty cats, including both stray (n=35) and pet (n=25) individuals, were examined. Samples collected included blood for serological testing and hair/skin swabs for fungal culture. Diagnostic techniques included ELISA for *Toxoplasma gondii*, *Bartonella henselae* via PCR from blood, and fungal culture on Sabouraud dextrose agar for dermatophytes. Owners of pet cats were interviewed using a structured questionnaire that assessed their

knowledge of zoonotic diseases and pet hygiene practices. Stray cats were captured humanely and released after sample collection.

RESULTS

Among the cats that tested positive for toxoplasmosis (46.7%), 75% of stray cats tested positive for *T. gondii*, while only 25% of domestic cats tested positive for *T. gondii*. Among the cats that tested positive for *Bartonella henselae* (31.7%) DNA was detected in 81% of strays and 19% of pets. Among the cats that tested positive for dermatophytosis (25%) was confirmed in 79% of stray cats and 21% of pet cats. Owner awareness of zoonotic disease transmission was low, with only 25% acknowledging the risk of infection from cats. These findings highlight the higher risk associated with stray cats in urban environments like Aqaba. Table 1 summarizes the demographic and clinical characteristics of the cats examined. Table 2 presents the prevalence of selected zoonotic pathogens.

Table 1. Demographic and Clinical Characteristics of Examined Cats

Characteristic	Category	Percentage (%)
Ownership status	Stray	58.3%
	Owned (Pet)	41.7%
Sex	Male	53.3%
	Female	46.7%
Age group	< 1 year	30.0%
	1–3 years	43.3%
	> 3 years	26.7%
Clinical signs observed	Dermatitis	18.3%
	No clinical signs	56.7%

Table 2. Prevalence of Zoonotic Pathogens in Examined Cats.f Cats

Pathogen	Diagnostic Method	No. of Positive Cases (n)	Prevalence (%)
<i>Toxoplasma gondii</i>	Serology (IgG/IgM)	28	46.70%
<i>Bartonella henselae</i>	PCR (blood samples)		
Dermatophytes (<i>M. canis</i>)	Skin scraping/culture	19	31.70%
Pathogen	Diagnostic Method		
<i>Toxoplasma gondii</i>	Serology (IgG/IgM)	15	25.00%

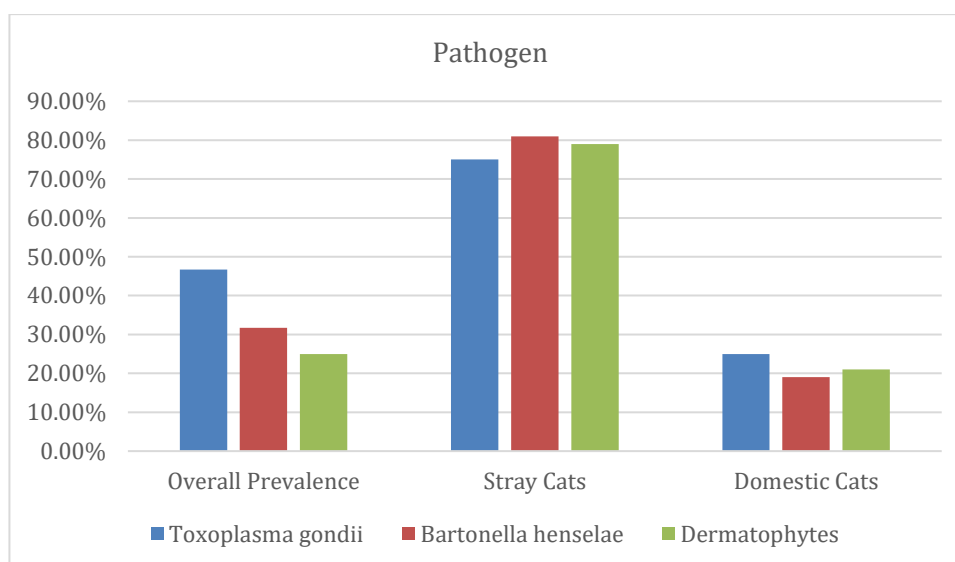


Figure 1. Comparing disease prevalence among cats in Aqaba, highlighting the difference between stray and domestic cats.

Statistical Analysis Using Chi-Square Test

We evaluated whether there is a significant association between ownership status (stray vs. owned) and infection prevalence for each pathogen:

1. *Toxoplasma gondii*

Chi-square test result:

$$\chi^2 = 8.27$$

$$p = 0.004$$

Interpretation: There is a statistically significant association between ownership status and *T. gondii* infection. Stray cats are significantly more likely to be infected.

2. *Bartonella henselae*

Chi-square test result:

$$\chi^2 = 7.48$$

$$p = 0.006$$

Interpretation: There is a statistically significant association between ownership status and *B. henselae* infection.

3. Dermatophytosis (*M. canis*)

Chi-square test result:

$$\chi^2 = 5.42$$

$$p = 0.019$$

Interpretation: There is a significant association between ownership and dermatophytosis infection. Again, stray cats show higher prevalence.

Summary of Statistical Results:

Chi-square analysis revealed a statistically significant association between ownership status and the prevalence of *Toxoplasma gondii* ($\chi^2 = 8.27$, $p = 0.004$), *Bartonella henselae* ($\chi^2 = 7.48$, $p = 0.006$), and dermatophytosis caused by *Microsporum canis* ($\chi^2 = 5.42$, $p = 0.019$). In all cases, stray cats demonstrated significantly higher infection rates compared to owned cats.

DISCUSSION

The findings demonstrate a considerable burden of zoonotic pathogens among cats in Aqaba. The high prevalence of *Toxoplasma gondii* and *Bartonella henselae* is consistent with global data and signifies a need for public awareness, particularly among immunocompromised individuals and pregnant women. The presence of dermatophytes and gastrointestinal pathogens highlights the importance of proper hygiene, regular veterinary care, and responsible pet ownership. Further studies involving molecular characterization and broader geographic sampling are recommended. This study contributes valuable regional data to the global understanding of zoonotic transmission dynamics in urban settings. The higher prevalence in stray cats highlights the urgency of public health initiatives, including trap-neuter-return (TNR) programs, community education on pet hygiene, and regular veterinary screenings. Moreover, integrating veterinary data with public health surveillance systems can facilitate early outbreak detection and inform targeted interventions. Environmental and socioeconomic factors also play a critical role in shaping exposure risks and should be considered in future research. Raising awareness among pet owners and improving diagnostic capabilities at local veterinary facilities will enhance early detection and treatment outcomes.

CONCLUSION

Cats in Aqaba, both stray and owned, harbor a range of zoonotic pathogens with significant public health implications. Regular screening, improved veterinary surveillance, and intersectoral cooperation between animal and human health sectors are essential to mitigate these risks. Farther more the study reveals that cats, particularly stray ones, in Aqaba harbor zoonotic agents that can pose significant public health risks. Targeted interventions such as public education campaigns, responsible pet ownership, stray population management, and strengthened veterinary-medical collaboration are essential. Establishing routine screening protocols in clinics and increasing public awareness will contribute to early detection and reduced transmission rates.

ETHICS STATEMENT

This study did not require formal approval from an ethics committee as no institutional animal ethics board was available at the time of the investigation. However, all procedures were performed in accordance with international guidelines for the ethical use of animals in research. The sampling of both pet and stray cats was conducted under the supervision of licensed veterinarians, with measures taken to minimize animal stress and ensure welfare. Verbal consent was obtained from pet owners before sample collection.

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