

ORIGINAL ARTICLE

Prevalence and Risk Factors of Feline Panleukopenia at Central Veterinary Hospital, Bangladesh

Maheshwor Bhagat Mali¹, Jahagir Alam^{1*}, Md. Aftabuzzaman², Md. Mominul Islam³, Md. Shakil Islam⁴, Md. Akib Zabed⁵, Md. Royhan Gofur⁶

¹Department of Anatomy, Histology and Physiology, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

²Department of Poultry Science, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

³Department of Pathology, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

⁴Department of Pharmacology and Toxicology, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

⁵Department of Medicine and Public Health, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

⁶Department of Veterinary and Animal Sciences, University of Rajshahi, Rajshahi, Bangladesh

Abstract

Background: Feline panleukopenia (FPL) is a highly contagious and often fatal viral disease of cats, posing a significant threat to feline populations, particularly in multi-cat environments such as households, shelters, and catteries. In Bangladesh, epidemiological data on FPL remain limited. This study aimed to estimate the prevalence of feline panleukopenia and identify associated risk factors among cats presented to a major veterinary referral center in Dhaka.

Methods: A retrospective study was conducted at the Central Veterinary Hospital, Dhaka, using hospital register records. Data from 3,217 cats presented during the study period were reviewed. Of these, 278 cats were diagnosed as FPL-positive based on clinical history, characteristic clinical signs, and rapid antigen test results. Epidemiological variables, including age, sex, and breed, were extracted and analyzed using the Chi-square (χ^2) test

Results: The overall prevalence of feline panleukopenia was 8.64%. Female cats accounted for a higher proportion of cases (61.87%) compared to males (38.13%). Local breeds showed a higher occurrence of FPL (73.38%) than exotic breeds (26.62%). Age-wise analysis revealed that the highest occurrence was observed in kittens aged 0–6 months (39.93%), followed by cats aged >12 months (33.81%) and 7–12 months (26.26%).

Conclusion: Feline panleukopenia remains a common and significant infectious disease among cats in Dhaka city, with higher occurrence observed in young cats, females, and local breeds. Implementing regular vaccination programs, improving biosecurity, and promptly managing infected cats are essential to reduce the burden of FPL and prevent further transmission.

Keywords: Breed, Age, Gender, Feline Panleukopenia, Hospital

*Correspondence: jahangirbau27@gmail.com

All rights reserved 0497/2025

Introduction

In Bangladesh, pet rearing was historically uncommon; however, in recent years it has increased markedly, particularly in urban areas. Pets play an important role as companions, providing physical, social, and emotional benefits by encouraging physical activity, fostering empathy and responsibility in children, and offering comfort and emotional support to adults, thereby reducing stress and loneliness within families (Robertson et al., 2000). Although official statistics on the cat population in Bangladesh are unavailable, the number of owned cats is steadily increasing. Along with this growth, infectious diseases have emerged as a major challenge in effective pet health management.

Several viral diseases pose significant threats to companion animals in Bangladesh. Canine parvoviral enteritis, canine distemper, and rabies are among the most common and serious viral diseases affecting dogs, whereas feline panleukopenia and feline calicivirus infections represent major viral threats to cats (Sultana et al., 2016). Feline panleukopenia virus (FPV), also known as feline distemper, is a highly contagious and often fatal parvoviral disease affecting both domestic and wild cats worldwide (Sykes, 2013). The causative agent is a small, non-enveloped, single-stranded DNA virus that preferentially targets rapidly dividing cells, including those in lymphoid tissues, bone marrow, intestinal epithelium, and developing fetuses (Clemens & Carlson, 1989). A hallmark feature of the disease is severe panleukopenia, which results in profound immunosuppression.

The clinical manifestation of FPV infection ranges from subclinical infection to peracute, fatal disease. Early clinical signs commonly include fever, anorexia, and marked lethargy. Vomiting is a frequent presenting complaint, whereas diarrhea—ranging from soft to hemorrhagic—occurs less consistently. Mortality is often associated with complications such as severe dehydration,

septicemia, secondary bacterial infections, or disseminated intravascular coagulation (DIC) (Kruse et al., 2010). Transmission primarily occurs through ingestion of virus shed in feces; however, indirect transmission via contaminated environments and direct contact with infected cats or their secretions also plays a substantial role. Outbreaks are particularly severe in high-density settings such as catteries, animal shelters, and multi-cat households (Tajbir-Abir, 2022).

Cats that survive the critical early phase of infection—typically the first five days—generally recover, although the convalescent period may extend over several weeks (Litster and Benjanirut, 2014). In Bangladesh, FPV has been recognized as a significant health concern among pet cats, with clinical outcomes varying widely depending on disease severity (Chisty et al., 2020). Younger cats, particularly those under six months of age, are reported to be more susceptible than older cats. Infection has also been observed more frequently in male cats compared to females, and unvaccinated cats are at substantially higher risk of infection than vaccinated ones (Rahman and Ahmed, 2024).

Commercial vaccines against FPV are widely available in both modified live and inactivated formulations (Bergmann et al., 2018). The recommended vaccination protocol includes two primary doses administered several weeks apart, followed by a booster dose after one year to maintain long-term protective immunity (Truyen et al., 2009). Despite the availability of effective vaccines, FPV remains prevalent, highlighting gaps in vaccination coverage and disease awareness.

Data generated from the Central Veterinary Hospital are particularly valuable for understanding and managing feline panleukopenia in Dhaka city, as the hospital serves as a primary referral, surveillance, and treatment center, providing large-scale and clinically validated information that directly informs disease control strategies. Previously, disease occurrence studies were conducted in Fulbaria and Shahjadpur

Feline Panleukopenia at Central Veterinary Hospital, Bangladesh

Upazila Veterinary Hospitals in the Mymensingh and Sirajganj districts, respectively (Ripa et al., 2024; Abu et al., 2025). Building upon these findings, the present study was designed to investigate the occurrence and associated risk factors of feline panleukopenia in cats in the capital city of Bangladesh. This information is essential for understanding the epidemiology of FPV and for developing effective preventive and control measures in the Bangladeshi context.

Materials and methods

Study area and period

This investigation was conducted at the central veterinary hospital in Dhaka, Bangladesh, in 2024. Data were obtained through direct interviews with cat owners as well as from the official record books of the hospital, which documented all cats presented for treatment. The day-to-day patient's information, such as name and address of the owner, species, age, and weight of patients were gathered from the registered record books of central veterinary hospital. The clinical signs and their tentative diagnosis with treatment were also recorded from the registered book kept at the central veterinary hospital for specific diseases.

Sample

During the study period, approximately 3,217 cats were registered at the central veterinary hospital. A total of 278 cats were tentatively diagnosed with feline panleukopenia based on their clinical history, clinical signs, and presenting symptoms. The feline panleukopenia was confirmed with the rapid kit test. The occurrence of feline panleukopenia was subsequently analyzed according to breed, age, sex, and feline panleukopenia vaccination status.

Data collection

Data were collected by face-to-face interaction with the responding cat owner, repeated questioning, observation of the cat's clinical signs, and from the record book of the veterinarian. Questions based on basic information about the owner, pet information like number of pets, breed, age, sex, source of purchase, body weight, vaccination, deworming, major complaints, clinical signs, feed items and supplied amount, water supply, housing, and rearing system were asked to the cat owner to get the cat information.

Clinical examination and diagnosis

Through the clinical-epidemiological history and clinical examination of the patients, the cases were diagnosed. The feline panleukopenia virus test kit (TESTSEALABS™ Rapid Test Kit, Feline Panleukopenia Virus Antigen Test Cassette, Hangzhou, Zhejiang, China) was used for confirmation of cases. The cat with a clinical history of frequent vomiting, diarrhea, anorexia, depression, etc., was initially suspected of being feline positive by our expert veterinarians at central veterinary hospital. Then, for the confirmatory diagnosis, the feces were taken as a sample for the feline panleukopenia test. The sample was collected using a sterile cotton bud from the anal region and placed in an assay buffer tube. Both were mixed thoroughly and kept for 2 minutes. The FPV cassette was removed from the foil pouch and placed on a clean, sterile flat table. Two to three drops of the sample mixture were then added to the hole of the cassette and left to wait for 7-10 minutes. The result was indicated by the appearance of red lines on the cassette. If the 2 red lines (both control and test line) were shown (Figure 1), the cat was confirmed as feline panleukopenia positive and was given therapeutic management.



Figure 1. Figure showing a) typical sign of feline panleukopenia-infected cat. b) Rapid kit test of feline panleukopenia virus antigen. c) Feline panleukopenia positive reaction (C, control & T, test) in the rapid kit test.

Data analysis:

Data were entered into Microsoft Excel 2019 and checked for consistency and completeness. Data for risk factors associated with feline panleukopenia in cats were initially analyzed using the chi-square (χ^2) test (Table 1). Results were expressed as odds ratios (ORs) with corresponding 95% confidence intervals (CIs). A p-value of ≤ 0.05 was considered statistically significant.

Results and discussion

After clinical examination of suspected cats and confirmation using a feline panleukopenia virus (FPV) rapid diagnostic kit, the contribution of several risk factors—including sex, age, breed, and vaccination status—to the occurrence of feline panleukopenia was evaluated.

Overall occurrence of feline panleukopenia in cats

The survey conducted at the Central Veterinary Hospital, Dhaka, aimed to determine the occurrence of feline panleukopenia among cats presented for clinical care. The overall occurrence of feline panleukopenia was 8.64% (278/3217). Compared with other recorded conditions, skin diseases were the most frequent (35.59%), followed by fractures (21.60%), conjunctivitis (9.48%), flu (4.29%), and other conditions (20.39%) (Figure 2).

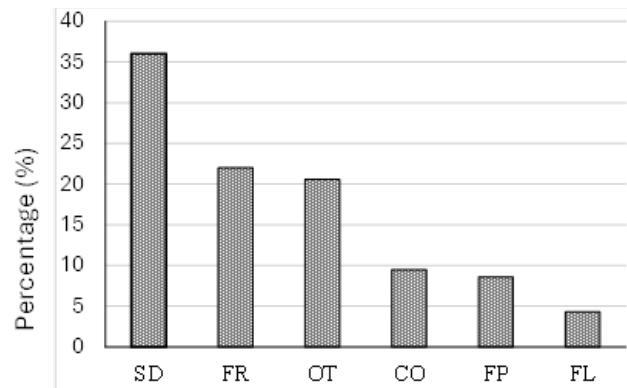


Figure 2: Occurrences and common diseases in cats recorded at central veterinary hospital of Dhaka. SD, skin disease; FR, fracture; OT, others; CO, conjunctivitis; FP, feline panleukopenia; FL, flu.

Previous studies conducted in Dhaka reported lower occurrences of feline panleukopenia, with prevalence rates of 7.5% and 4.12%, respectively (Sultan et al., 2016; Hasan et al., 2024). The higher occurrence observed in the present study may be attributed to differences in age structure, vaccination coverage, breed composition, population density, seasonal variation, as well as variations in study design and sampling methods. These factors are known to influence the reported prevalence of infectious diseases.

Occurrence of feline panleukopenia in cats based on breed

Breed-wise analysis revealed a higher occurrence of feline panleukopenia among local breeds (73.38%) compared to exotic breeds (26.62%) (Table 1). Similarly, Chisty et al. (2020) reported that 24.2% of feline panleukopenia-affected cats were local breeds,

while 10.5% were exotic breeds. The increased susceptibility of local breeds may be related to their larger population size, irregular or absent vaccination, suboptimal nutritional management, and comparatively poorer housing conditions when contrasted with exotic breeds, which often receive more attentive care from owners.

Occurrence of feline panleukopenia in cats based on sex

Sex-wise distribution showed that female cats accounted for a higher proportion of feline panleukopenia cases (61.87%) compared to male cats (38.13%) (Table 1). This finding contrasts with the results of Sultan et al. (2016), who reported a higher prevalence among male cats. The higher occurrence in females observed in the present study may be influenced by differences in management practices, nutritional status, or population structure. Moreover, female cats are more commonly kept as household pets in Dhaka city, which may have increased their representation among hospital-presented cases.

Occurrence of feline panleukopenia in cats based on age

Age-specific analysis indicated that the highest occurrence of feline panleukopenia was observed in cats aged 0–6 months (39.93%). The occurrence in cats aged 7–12 months and those older than 12 months was 26.26% and 33.81%, respectively (Table 1). Overall, the age-specific occurrence observed in the present study was higher than that reported by Sultana et al. (2016), who documented occurrence rates of 25.7%, 6.15%, and 2% in the respective age groups. The higher susceptibility of younger cats may be explained by their immature

immune systems, waning maternal antibodies, and incomplete vaccination status.

Occurrence of feline panleukopenia in cats based on immune status

Vaccination status had a pronounced effect on disease occurrence. A markedly higher proportion of feline panleukopenia cases (87.77%) was recorded among non-vaccinated cats, whereas vaccinated cats showed a substantially lower occurrence (Table 1). Similar findings were reported by Tauhiduzzaman et al. (2021), who observed that approximately 97% of non-vaccinated cats were affected, compared to only 2.63% of vaccinated cats. Although the exact proportions vary between studies, the findings consistently demonstrate that lack of vaccination is a major risk factor for feline panleukopenia.

Frequently used treatment in feline panleukopenia cases

Feline panleukopenia is a viral disease for which no specific antiviral therapy is currently available. Therefore, treatment is primarily supportive, aimed at minimizing complications and improving survival. Commonly employed therapeutic interventions included broad-spectrum antibiotics, fluid therapy, antiemetics, antihistamines, and multivitamin supplementation. Antibiotics such as ceftriaxone, amoxicillin, and metronidazole were administered to prevent or manage secondary bacterial infections. Supportive care also included fluid therapy, antiemetics such as ondansetron, antihistamines including pheniramine maleate, and multivitamin preparations such as Aminovit Plus Vet and Vita-ADE to support recovery.

Table 1. Chi-square analysis of risk factors associated with feline panleukopenia in cats.

Variable	Category	FPV positive n (%)	χ^2	p-value	Interpretation
Sex	Male	106 (38.1)	15.88	<0.001	Significant
	Female	172 (61.9)			
Breed	Local	204 (73.4)	62.56	<0.001	Highly significant
	Exotic	74 (26.6)			
Age (months)	0–6	111 (39.9)	8.05	0.018	Significant
	7–12	73 (26.3)			
	12–24	94 (33.8)			
	Yes	34 (12.2)			
Vaccination	No	244 (87.8)	164.22	<0.001	Highly significant

Conclusion

Feline panleukopenia continues to pose a considerable threat to the cat population in Dhaka city, study period. The author also acknowledges the director and veterinary surgeons of the central veterinary hospital for their kind and cordial support during the health threat to the cat population in Dhaka city, study period. underscoring the need for strengthened disease control and prevention efforts. The findings highlight the **Ethical approval and funding source** importance of improving awareness among pet owners regarding proper husbandry practices, timely vaccination, and early veterinary consultation. Given the absence of Ethics Committee of Sher-e-Bangla Agricultural specific antiviral therapy, emphasis should be placed on University and funded by the Bangladesh University preventive measures, particularly comprehensive Grants Commission and Sher-e-Bangla Agricultural vaccination coverage and improved management University Research System. practices, to reduce disease burden and mortality. Strengthening routine surveillance at veterinary hospitals and implementing targeted public awareness programs will be crucial for minimizing the impact of feline panleukopenia and safeguarding the growing urban cat population in Bangladesh.

Acknowledgment

The authors acknowledge the authority of central veterinary hospital for their cordial support during the

Conflict of Interest

The authors declare no conflict of interest.

References

1. Bergmann M, Schwertler S, Reese S, Speck S, Tryuen U, Hartmann K. Antibody response to feline panleukopenia virus vaccination in healthy adult cats. *Journal of Feline Medicine and Surgery*. 2018 Dec;20(12):1087-93.
2. Chisty NN, Belgrad JP, Al Sattar A, Akter S, Hoque MA. Clinico-epidemiological investigation of feline panleukopenia and parvoviral enteritis in the two largest pet hospitals in Bangladesh. *Journal of Advanced Veterinary and Animal Research*. 2020 Dec 4;7(4):726.
3. Clemens DL, Carlson JO. Regulated expression of the feline panleukopenia virus P38 promoter on extrachromosomal FPV/EBV chimeric plasmids. *Journal of virology*. 1989 Jun;63(6):2737-45.
4. Akter R, Soltana T, Nisa N, Rahman T, Islam MR, Hossain MM, Alam J. Retrospective case study of livestock diseases recorded at Fulbaria upazila veterinary hospital in Mymensingh district of Bangladesh. *Bangladesh Journal of Animal Science*. 2024 Dec 31;53(4):135-43.
5. Huraira A, Alam J, Soltana T, Rahman MM, Islam MS, Islam MM, Rahman AN. Retrospective study of livestock diseases registered at Government Veterinary Hospital in Shahjadpur upazila of Sirajganj district. *Research in Agriculture Livestock and Fisheries*. 2024;11(3):315-25.
6. Hasan R, Das CR, Akther KA, Hossain MM. Disease prevalence in pets at various pet hospitals in Bangladesh. *Sch J Agric Vet Sci*. 2024 Oct; 7:121-32.
7. Kruse BD, Unterer S, Horlacher K, Sauter-Louis C, Hartmann K. Prognostic factors in cats with feline panleukopenia. *Journal of Veterinary Internal Medicine*. 2010 Nov;24(6):1271-6.
8. Litster A, Benjanirut C. Case series of feline panleukopenia virus in an animal shelter. *Journal of feline medicine and surgery*. 2014 Apr;16(4):346-53.
9. Rahman MM, Ahmed MS. Seroprevalence, risk factors, and therapeutic response of feline panleukopenia in household cats at Savar Upazila of Dhaka district in Bangladesh. *Asian Journal of Medical and Biological Research*. 2024 Oct 20;10(4):141-7.
10. Robertson ID, Irwin PJ, Lymbery AJ, Thompson RC. The role of companion animals in the emergence of parasitic zoonoses. *International journal for parasitology*. 2000 Nov 1;30(12-13):1369-77.
11. Sultana RN, Uddin AS, Asmaul H, Yesmin RN, Sabina Y, ATM B, Sadikul IM, Monira N, Jahengir AK. Prevalence of diseases in pet animals at Dhaka city of Bangladesh. *Ann. Vet. Anim. Sci.* 2016;3:1-5.
12. Sykes JE. Feline panleukopenia virus infection and other viral enteritides. *Canine and feline infectious diseases*. 2013 Aug 26:187.
13. Tajbiur-Abir M. Identification of risk factors associated with feline panleukopenia of cats in CVASU and TTPHRC. *Chattogram Veterinary and Animal Sciences University Khulshi, Chattogram-4225, Bangladesh*; 2022.
14. Touhiduzzaman M. An overview on feline panleukopenia in cats at Teaching and Training Pet Hospital and Research Centre. 2021.
15. Tryuen U, Addie D, Belák S, Boucraut-Baralon C, Egberink H, Frymus T, Gruffydd-Jones T, Hartmann K, Hosie MJ, Lloret A, Lutz H. Feline panleukopenia. ABCD guidelines on prevention and management. *Journal of Feline Medicine & Surgery*. 2009 Jul 1;11(7):538-46.