

Prevalence of canine parvovirus: A case study of Central Veterinary Clinic, Abuko, The Gambia (2020-2023)

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ABSTRACT: Information about Canine parvovirus (CPV) in dogs is limited in the Gambia; therefore, this retrospective study assessed the prevalence of CPV disease among dogs from Kanifing Municipal Council (KMC) and West Coast Region (WCR) brought to Central Veterinary Clinic, Abuko, The Gambia. The animals were clinically diagnosed to observe signs of CPV disease. Data from clinic logbooks from January 2020 to December 2023 were obtained on demographic patterns, seasonal effects, symptoms, age and vaccination status. These data were analysed using descriptive statistics. Out of 301 dogs brought to the clinic, 229 suspected cases (76.10%) of CPV were observed. The highest occurrence of suspected CPV cases was recorded in 2022 (31.4%), followed by 2023 (24.5%) and 2020 (22.7%), while the lowest was in 2021 (21.4%). Also, the highest value (14.0%) of the suspected parvo was recorded in February, followed by 13.5% in June, while November had the lowest suspected cases (2.1%). Drier months of the year (December-June) had the highest record compared to July-November. The majority of the suspected parvo cases (76.9%) were observed in adult animals, while (23.1%) were observed in young animals. Geographical distribution data showed that the majority (52.0%) of suspected parvo cases were from the KMC, and (48.0%) were from the WCR. The most common set of clinical signs was "Fever and Haemorrhagic Diarrhoea," accounting for (34.9%) of the suspected cases, followed by "Loss of Appetite, Fever, and Dehydration" with 24.9% of the suspected cases. "Foul Smelling Diarrhoea and Vomiting" accounted for 23.1%. The results revealed that the suspected parvo cases were more prevalent among unvaccinated dogs. It could be concluded from the study that season and vaccination status were potential risk factors associated with CPV among the dog population in KMC and WCR, The Gambia.

Keywords: Clinical signs, Gambia, haemorrhagic diarrhoea, parvo, risk factors, vaccination.

INTRODUCTION

Canine parvovirus (CPV) is a global, highly contagious viral disease that affects both stray and owned dog populations with a high morbidity and mortality rate (Grigonis *et al.*, 2002). Within three to seven days of infection, canines with CPV appear with acute gastroenteritis, lethargy, acute vomiting, anaemia, dehydration, fever, and bloody diarrhoea due to damage to intestinal epithelial crypts (Gang *et al.*, 1980). The disease most often strikes in pups between six and twenty weeks old, but older animals may sometimes also be affected (Singh *et al.*, 2011). A rare variant of the disease is known to cause myocarditis in young puppies. Effective

vaccination and disinfection are crucial for disease prevention and control in dog households and animal shelters (Tiwari *et al.*, 2013). Although the disease is vaccinated against, there is still a chance of vaccine failure among pups. CPV can affect all dogs, but unvaccinated dogs and puppies younger than four months old are at the most risk (Mahato *et al.*, 2023).

In the wet season, the highest incidence of parvoviruses occurred in September. On the other hand, breed also acts as a predisposition factor for the occurrence of parvovirus infection in dogs (Baidya *et al.*, 2021). The breed-wise incidence rate among positive cases was found to be

higher in local or non-descript breeds, followed by German Shepherd and other exotic breeds. Males were more likely to contract the virus than females, with the largest frequency of the parvovirus occurring in dogs under the age of six months. Young, unvaccinated pups and exotic breeds were particularly vulnerable to CPV infection among other risk factors. However, puppies that have received a vaccination might also get recurrent parvovirus infections (Mahato *et al.*, 2023). Information about CPV disease in the Gambia is scanty; therefore, this study was designed to assess its prevalence and risk factors in order to increase the database of the disease in The Gambia.

METHODOLOGY

Study location

The central veterinary clinic is located on Latitude 13°24'15"N and Longitude 16°39'21"W in the KMC, Abuko, the headquarters for the Gambia livestock services, veterinary complex. The central veterinary clinic has been chosen due to its long establishment and competent clinical record-keeping. The data used were extracted from records of dogs brought for treatment or vaccination from Kanifing Municipal Council (KMC) and the West Coast Region (Brikama).

Diagnosis method

Due to a lack of capacity by the central laboratory, Abuko, for either PCR or ELISA test for parvo, usually the animals were clinically diagnosed for clinical signs such as vomiting, bloody diarrhoea, lethargy, and loss of appetite, which are often attributed to canine parvovirus disease (MSD Veterinary Manual: Gallagher and Carnevale, 2025).

Sampling procedures

The sampling procedure involved retrospective data collection. Data were collected from clinic logbooks spanning January 2020 to December 2023. All the suspected cases of dogs diagnosed with parvovirus within the specified period were included, excluding any with incomplete records or other confounding factors. Data extracted included the date of diagnosis, age, sex, and observed clinical signs.

Sample size

The total number of dog cases recorded was 301, of which 229 (76.1%) were diagnosed with parvovirus.

Data analysis

The data obtained were subjected to descriptive statistical analysis using frequency, percentages, tables, bar charts, and pie charts in IBM SPSS Statistics Version 20

RESULTS AND DISCUSSION

Number of suspected parvovirus cases diagnosed based on clinical signs

Presented in Figure 1 is the number of dogs suspected of parvo among the cases examined. Over the four years reviewed at the Central Veterinary Clinic Abuko, out of 301 dogs taken to the clinic, a total of 229 (76.1%) cases of suspected Parvovirus infection were observed. Only 72 (23.9%) were not suspected of canine Parvovirus infection. This finding underscores the significant prevalence of Parvovirus among the canine population in the study location. Parvovirus infection is a highly contagious and potentially fatal disease in dogs, characterised by symptoms such as vomiting, diarrhoea, fever, and lethargy (Awad *et al.*, 2019). The high number of suspected cases observed highlights the importance of continued efforts in vaccination, proper hygiene, and prompt treatment to control the spread of the virus and mitigate its impact on canine health and welfare (Gamage *et al.*, 2020).

Yearly record of prevalence of parvovirus (parvo) cases

The yearly prevalence of suspected parvo cases recorded at the Central Veterinary Clinic Abuko is presented in Table 1. A total of 229 cases were seen in the clinical records reviewed, all of which had CPVI-like symptoms. The highest occurrence of CPVI-suspected cases was recorded in 2022 (31.4%) followed by 2023 (24.5%) and 2020 (22.7%) while the lowest occurrence was in 2021 (21.4%). The frequency of cases fluctuated over the years, with 2022 recording the highest number of cases (72) and 2021 the lowest (49). This indicates a variation in the incidence of parvo cases from year to year. Despite the fluctuations in frequency, the percentage distribution remained relatively stable, ranging from 21.4% to 31.4%. This suggests that while the actual number of cases varied, the proportion of parvo cases relative to the total cases remained consistent over the years (Rabbani *et al.*, 2021). Several factors could contribute to the observed trends in parvo cases. These may include changes in environmental conditions, a high rate of theft and death, vaccination rates, population density of susceptible animals, and public awareness campaigns about the importance of vaccination and preventive measures (Rabbani *et al.*, 2021).

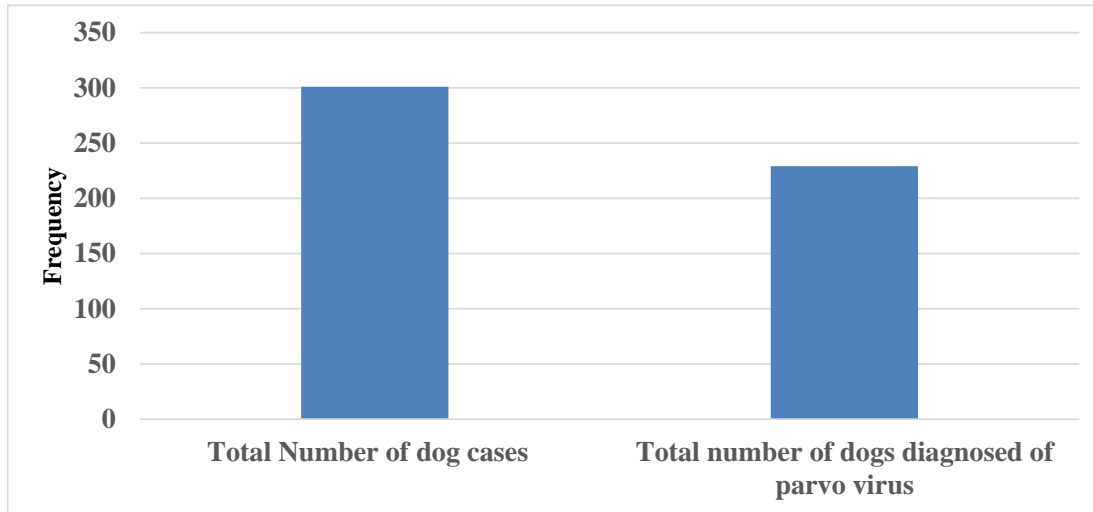


Figure 1. Number of suspected parvovirus cases diagnosed based on clinical signs

Table 1. Yearly prevalence of suspected parvovirus cases.

| Year | Frequency | Percentage |
|-------|-----------|------------|
| 2020 | 52 | 22.7 |
| 2021 | 49 | 21.4 |
| 2022 | 72 | 31.4 |
| 2023 | 56 | 24.5 |
| Total | 229 | 100.0 |

Table 2. Monthly prevalence of suspected parvo cases.

| Month | Frequency | Percentage |
|-----------|-----------|------------|
| January | 26 | 11.35 |
| February | 32 | 14.00 |
| March | 19 | 8.07 |
| April | 15 | 6.55 |
| May | 21 | 9.17 |
| June | 31 | 13.74 |
| July | 18 | 7.86 |
| August | 15 | 6.55 |
| September | 15 | 6.55 |
| October | 7 | 3.06 |
| November | 5 | 2.18 |
| December | 25 | 10.92 |
| Total | 229 | 100.00 |

Monthly prevalence of parvovirus (parvo) cases from January 2020 to December 2023

The results in Table 2 indicate that the frequency of suspected parvo cases varied significantly from month to month. June had the highest frequency with 31 suspected

cases, while November had the lowest with only 5 (2.18%). February contributed the highest percentage (14.0%), followed closely by June (13.74%), while November had the lowest contribution (2.1%). The data suggest potential seasonal patterns in parvo prevalence, with certain months, such as June, exhibiting higher prevalence compared to others (Akgül *et al.*, 2019). This is slightly different from the finding of Mahato *et al.* (2023), which reported that, in the wet season, the highest incidence of parvoviruses occurred in September (Mahato *et al.*, 2023). Factors such as temperature, humidity, and breeding cycles of susceptible animals may influence the transmission and spread of parvovirus. The lower prevalence observed in certain months, such as November and December, could be attributed to heightened awareness and implementation of preventive measures, such as vaccination campaigns or public education initiatives, during these periods.

Age categories of CPV cases

The result in Figure 2 shows the susceptibility of dogs to parvovirus infection. Most suspected parvo cases were observed in adult animals, with a frequency of 176 cases, accounting for 76.9% of the total cases recorded. In contrast, 53 cases, representing 23.1% of the total, were recorded in young animals. The percentage breakdown indicates that a significant proportion of suspected parvo cases occurred in adult animals, highlighting their susceptibility to the virus. However, it is notable that a substantial number of cases also affected young animals, underscoring the vulnerability of this age group to parvo infection. The higher frequency of suspected cases in adult animals may be attributed to factors such as decreased immunity, inadequate vaccination coverage, and

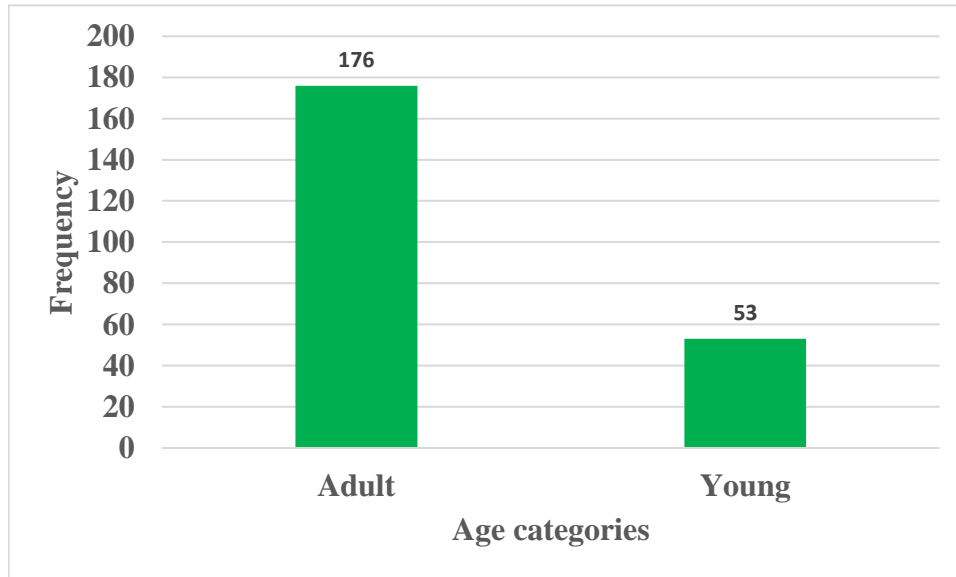


Figure 2. Age categories of suspected parvo cases.

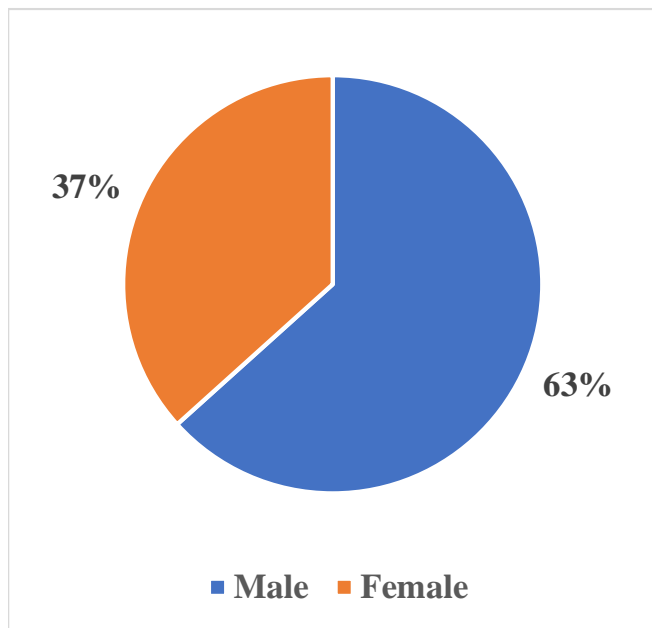


Figure 3. Gender distribution of suspected Canine Parvo Virus.

increased exposure to the virus due to environmental factors or social interactions (Grigonis *et al.*, 2002). This result contradicts that of Nandi *et al.* (2019), which stated that although CPV can affect dogs at any age, severe infection is most common in puppies between 6 weeks and 4 months old and often results in collapse, due to myocarditis (Nandi *et al.*, 2019). This is crucial in veterinary practice because understanding the age distribution of parvo cases is crucial for veterinary clinics to tailor their preventive measures and treatment protocols. For

instance, an emphasis on vaccination in both young and adult animals, as well as implementing strict hygiene and biosecurity measures, can help mitigate the spread of parvo (Mahato *et al.*, 2023).

Gender distribution of CPV

The results in Figure 3 indicate that the majority of suspected parvo cases were observed in male animals, with a frequency of 145 cases, accounting for 63.3% of the total cases recorded. In contrast, 84 cases, representing 36.7% of the total, were recorded in female animals. This could be due to the fact that there were more female dogs brought to the clinic or an inherent genotype difference between both sexes. The percentage breakdown indicates that a significant proportion of suspected parvo cases affected male animals compared to females (Singh *et al.*, 2011). This suggests a potential gender-related susceptibility to parvo infection, although further investigation is needed to determine underlying factors contributing to this difference. Several factors may contribute to the observed gender distribution of parvo cases. Hormonal differences between male and female animals could affect immune responses, making one gender more susceptible to infection. Behavioural differences, such as roaming behaviour in male dogs, could also increase their exposure to the virus (Awad *et al.*, 2019).

Locations of dogs diagnosed with parvovirus

The results from Figure 4 indicate that most suspected parvo cases were diagnosed in dogs from the KMC area,

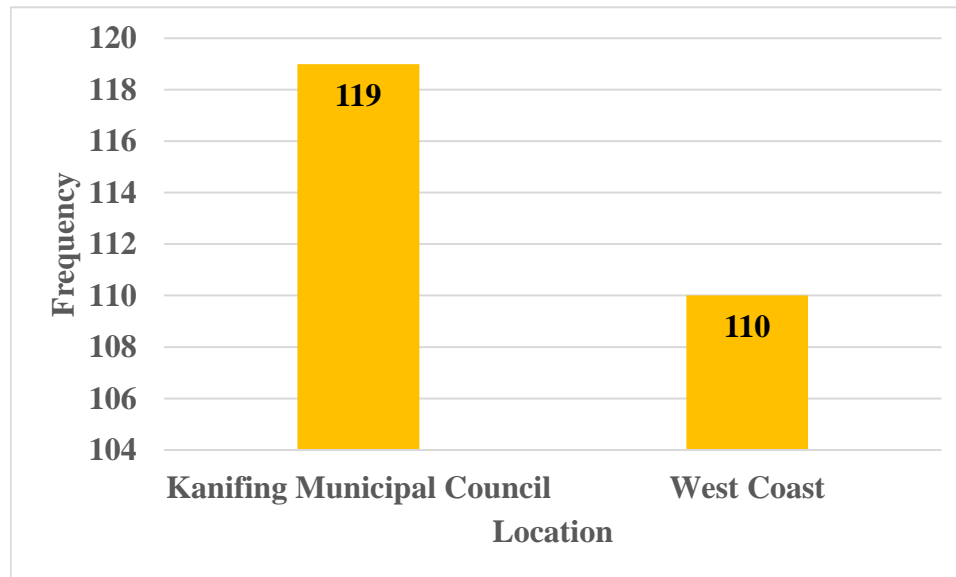


Figure 4. Locations of dogs diagnosed with suspected parvovirus.

with a frequency of 119 cases, accounting for 52.0% of the total cases recorded. In contrast, 110 cases, representing 48.0% of the total, were diagnosed in dogs from the West Coast Region. The percentage breakdown indicates that a slightly higher proportion of parvo cases originated from the KMC area compared with the West Coast Region (Brikama). This suggests a potentially higher prevalence or incidence of parvo infection among dogs residing in the KMC area. Several factors may contribute to the geographical distribution of parvo cases. These may include dog population density, socio-economic factors influencing access to veterinary care and vaccination, environmental conditions conducive to virus transmission, and differences in dog management practices among communities (Awad *et al.*, 2019). Brikama area may be at an advantage in accessing veterinary services or vaccination because it has a lower population of dogs compared to KMC; therefore, it records fewer cases.

Clinical signs observed in suspected cases of parvo

The results in Figure 5 indicate that for the suspected cases, the most common set of symptoms was "Fever and Haemorrhagic Diarrhoea," accounting for 34.9% of the suspected cases. Following closely, "Loss of Appetite, Fever, and Dehydration" were observed in 24.9% of cases. "Foul-Smelling Diarrhoea and Vomiting" accounted for 23.1% of cases. The least common set of symptoms was "Vomiting, Hemorrhagic Diarrhoea, Depression, and Loss of Appetite," observed in 17.0% of cases. This is in line with (Nandi *et al.*, 2019) that clinical signs of parvovirus enteritis generally develop within 5–7 days of infection but can range from 2–14 days. Initial clinical signs may be non-

specific (e.g., lethargy, anorexia, fever) with progression to vomiting and hemorrhagic small-bowel diarrhoea within 24–48 hours. Approximately 25% of dogs may have non-hemorrhagic diarrhoea. The results are also in tandem with a retrospective study of Akanbi *et al.* (2025), who reported profuse vomiting and hemorrhagic diarrhoea as key features of parvo. Physical examination findings can include depression, fever, dehydration, and intestinal loops that are dilated and fluid-filled. Abdominal pain warrants further investigation to exclude the potential complication of intussusception. Severely affected animals may present collapsed with prolonged capillary refill time, poor pulse quality, tachycardia, and signs of hypothermia, potentially consistent with septic shock. The prevalence of symptoms suggests that fever and diarrheal symptoms, particularly hemorrhagic diarrhoea, are prominent clinical presentations of parvo infection in affected animals. Loss of appetite and dehydration are also significant clinical signs, often indicating systemic illness and fluid loss associated with parvo infection (Goddard and Leisewitz, 2010).

Vaccination status of the dogs

The results in Figure 6 indicate that the majority of the suspected cases (91.7%) were not vaccinated against parvovirus. Only a small percentage (8.3%) of the suspected cases were vaccinated. This is supported by similar research by Mahato *et al.* (2023), which states that effective vaccination and disinfection are crucial for disease dissemination and prevention in dog households and animal shelters. Although the disease is vaccinated against, there is still a chance of vaccine failure among

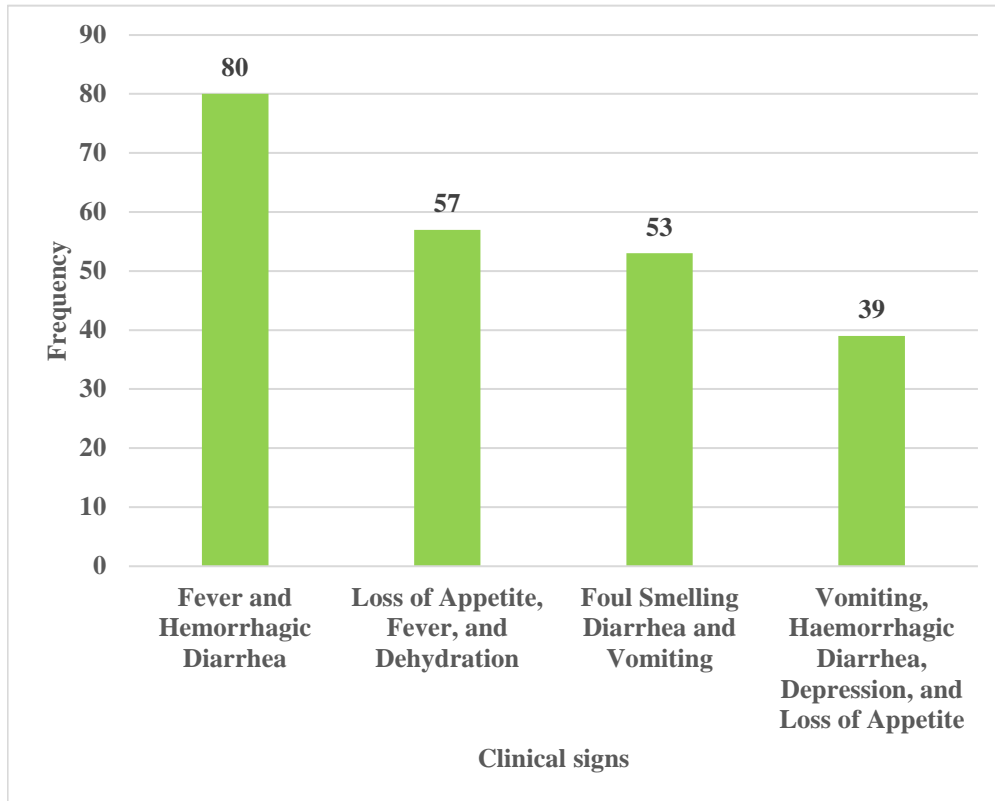


Figure 5. Clinical signs observed in suspected cases of parvo.

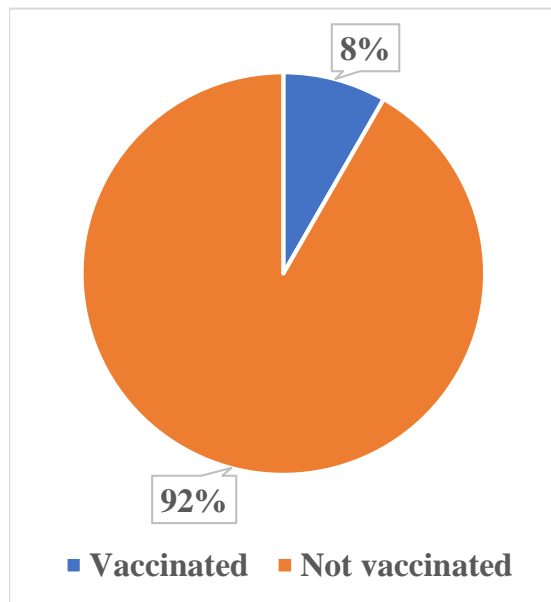


Figure 6. Vaccination status of the dogs.

pups. CPV can affect all dogs, but unvaccinated dogs and puppies younger than four months old are at the highest risk (Awad *et al.*, 2019).

Conclusion

The study revealed a high prevalence of CPV in both the KMC and WCR of The Gambia, with June being the highest prevalence, which marks the beginning of the wet season. Unvaccinated status was observed to be a major potential risk factor, as most cases were from unvaccinated dogs. It is therefore recommended that vaccination campaign awareness be intensified to protect vulnerable dog populations in The Gambia.

Limitation of the study

The laboratory lacked the capacity to carry out confirmatory diagnosis, such as PCR or ELISA; the result was based on clinical signs of Parvo.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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