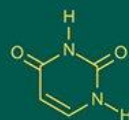


International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2026): 5.29
IJABR 2026; 10(2): 391-392
www.biochemjournal.com
Received: 10-11-2025
Accepted: 05-01-2026

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Patterns and causes of pediatric mortality in canine neonates presented to veterinary hospitals in Hyderabad

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DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i2e.7616>

Abstract

The present study analysed the pattern and causes of mortality in canine paediatric age groups presented to two veterinary hospitals in Hyderabad from January 2020 to July 2022. A total of 45,680 dogs of different breeds, ages and sexes were presented, of which 4064 puppies up to 12 weeks of age were examined. The puppies were classified as neonatal (birth to 2 weeks), infant (2-6 weeks) and paediatric (6-12 weeks). Among 601 newborn pups, 91 pups died during the whelping process with a mortality rate of 15.14%. The major causes of mortality at birth included stillbirths, anasarca, traumatic insults, congenital malformations and aspiration pneumonia. Neonatal mortality (birth-2 weeks) was 18.14%, including 3% losses due to respiratory distress syndrome (RDS). Infant stage mortality (2-6 weeks) was mainly due to hypoglycaemia, enteritis, hypothermia and worm burden. In the paediatric stage (6-12 weeks), worm burden and gastroenteritis were the leading causes of mortality. The results indicate that a majority of deaths occur in the neonatal period and are linked to periparturient and immediate postnatal causes, highlighting the importance of timely intervention, neonatal monitoring, immediate postpartum veterinary support and preventive deworming strategies.

Keywords: Canine neonatal mortality, pediatric mortality, stillbirths, hypoglycemia, respiratory distress syndrome, enteritis, worm burden, puppy losses

Introduction

The neonatal period in dogs represents a transition from a protected intrauterine environment to an external environment where thermoregulation, energy balance, respiratory adaptation and immune functioning must undergo critical adjustments. Neonatal losses in dogs can be substantial, with morbidity and mortality ranging from 5-35% (Munnich and Kuchenmeister, 2014) [9]. Mortality may occur in utero, during parturition, immediately postpartum or during the first weeks of life, with the highest risk observed during the perinatal period (Sotelo *et al.*, 2021) [11]. Neonates are physiologically immature, have limited ability to maintain glucose homeostasis, thermoregulate, or mount immune responses (Moxon and England, 2012) [8], predisposing them to non-infectious and infectious causes of death. Besides hypoxia, hypothermia, hypoglycaemia and dehydration, infectious agents like *E. coli*, CCoV and CPV are significant contributors of mortality particularly in unvaccinated puppies (Ghiggi *et al.*, 2013; Duijvestijn *et al.*, 2016) [4, 3]. This study aimed to document the stage-wise mortality pattern and major causes of deaths in canine pediatric age groups presented to veterinary hospitals in Hyderabad.

Materials and Methods

This study was conducted on dogs presented to the Veterinary Clinical Complex, College of Veterinary Science, Rajendranagar and Veterinary Hospital Bhoiguda, Hyderabad, from January 2020 to July 2022.

Study population: Dogs presented with full-term pregnancy, dogs about to whelp, dogs with history of neonatal losses during previous parturitions and all paediatric puppies (up to 12 weeks) presented for clinical care were included. A total of 45,680 dogs were examined, from which 4064 puppies up to 12 weeks of age and 601 newborn pups at whelping were considered for detailed analysis.

Puppies were categorized as: Neonatal: birth to 2 weeks, Infant: 2-6 weeks, Pediatric: 6-12 weeks.

Ethical approval: This study was approved by the Institutional Animal Ethics Committee (IAEC), PVNRTVU (Approval No. no.20/25/C.VSc, HYD.IAEC).

Results and Discussion

Among 4064 puppies examined, paediatric puppies (6-12 weeks) comprised the largest proportion (49.48%), followed by infant (32.38%) and neonatal pups (18.14%). Among 601 pups at whelping, 510 pups were live-born (84.86%) and 91 pups were dead at birth (15.14%). Stillbirths constituted the highest cause of birth mortality followed by anasarca, trauma, malformations and aspiration pneumonia. High stillbirths during whelping have been attributed to prolonged labour and dystocia.

Overall neonatal mortality (birth-2 weeks) was 18.14%, with respiratory distress syndrome (RDS) contributing to additional post-birth losses. RDS remains a major cause of early neonatal deaths in puppies due to pulmonary congestion, oedema and atelectasis.

Infant stage (2-6 weeks) mortality was mainly due to hypoglycaemia, enteritis, hypothermia and worm burden. Paediatric stage (6-12 weeks) mortality was predominantly due to worm burden and gastroenteritis.

Conclusion

Neonatal mortality constitutes the highest proportion of pediatric losses in dogs, with stillbirths and periparturient events being major contributors at birth, and hypoglycemia and gastrointestinal disorders being important causes during later stages. Strengthening whelping management, neonatal monitoring, prompt intervention for hypoglycemia and strict deworming protocols are essential measures for improving survival in canine puppies.

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