INTRODUCTION

- Rabies is an acute, fatal, progressive, incurable viral encephalitis affecting all warm-blooded animals, including humans. Dogs are the primary reservoir of rabies virus (RABV) in Africa for both humans and animals. Dog-transmitted rabies is estimated to kill approximately 24,000 and 31,000 people annually in Africa and Asia respectively (Knobel et al., 2005).
- Although rabies can be successfully controlled through vaccination, high rates of dog population turnover through births and deaths make the maintenance of herd immunity through vaccination challenging in populations of free-roaming dogs in low-resource settings. Understanding these demographic processes may help find solutions to create stable, vaccinated populations.

OBJECTIVE

Determine the rates and causes of mortality in owned, mostly free-roaming dogs in Hluvukani village of the Mnisi community, in Bushbuckridge Municipality, Ehlanzeni District, Mpumalanga Province.

MATERIAL AND METHODS

A cohort of adult dogs (one year and older) was enrolled in May and June 2014, and followed them for 12 months.
- Litters of puppies were enrolled at birth and followed for 120 days each.
- Outcomes (including death) were recorded during frequent follow-up visits, and causes of mortality were determined through owner interview (verbal autopsy) and post-mortem examination.
- Survival curves were plotted for both adults and puppies. Kaplan-Meier log-rank test and semi-parametric Cox regression regression were used to test for the difference of age and sex on survival.

RESULTS

Mortality rates are summarized in Table 1 and Crude monthly mortality rates are shown in Figures 2 and 3. Female dogs had a shorter survival time (mean = 341.7 days) compared to the male dogs (mean = 355.8 days) (p = 0.04) (Figure 4). Adult dogs of age 5 years and above had shorter survival time (mean = 338.5) (P=0.06) (Figure 5).
- No difference of survival between female and male was observed in puppies (p=0.3).
- 1.35 verbal autopsy results were collated for 27 adults and 135 puppies. Deaths classification is shown in Figures 6 and 7.

DISCUSSION

This study observed a low mortality rate in the adult cohort. This is higher than the rate of 0.3 per 1,000 dog-years seen over a five-year period in a study of insured Swedish dogs in their first year of life (Bonnett et al., 2005), but much lower than the risk of death seen in another study in Tanzania, which reported 450 deaths per 1,000 dog population (Hampson et al., 2009).
- Mortality in puppies was high with 2389.3 deaths per 1000 dog-years recorded, with a mean survival time of 60 days. Conan et al (2015) have reported the same trend in the HDSS-dog study in the same study area.
- Survival analysis between the two sexes in the adult cohort showed a significant difference, with females having significantly lower survival rates than males. The verbal autopsy indicated that most adult dogs died of natural causes and in the puppies, more deaths occurred by non-natural causes.

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REFERENCES