# A STUDY ON PREVALENCE AND EFFECTS OF PARASITES OF DOGS PRESENTED TO VETERINARY FACILITIES IN NAIROBI,KENYA

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# INTRODUCTION

- In Kenya, dogs are important in many urban and rural households contributing as house guards in the majority of the cases and as pets animals
- Parasitic diseases in particular gastrointestinal helminthes and protozoans have been identified as a major impediment to dog health worldwide owing to the direct and indirect loses they cause (Smith, 1991)

# Introduction continued

- These includes blood loss, respiratory problems, skin conditions and even death.
- Another concern is the risk of transmission of zoonotic parasitic diseases e.g. Visceral larval migrans, Hydatodosis, Giardiosis & emerging diseases such as cryptosporidiosis.
- Studies on parasitic conditions of dogs in Kenya has been limited and very little of information is available.
- However, this information is very important in evaluating and recommending parasite control measures in canine health and welfare programs.
- Therefore this study attempts to find out the actual parasitic status in dogs in Nairobi.

# LITERATURE REVIEW

- **OCCURRENCE OF PARASITES**

**Gastrointestinal parasites**

- Gastrointestinal parasites are worldwide problems and important cause of poor performance.
- Despite the widespread availability of highly efficacious antihelmintics, gastrointestinal parasites remain a common finding in dogs (Blagburn, 2001) especially in pppies.

  * Certain modes of transmission are exclusive for pups or neonates.

  * Low immunity
- Environmental contamination with the infective stages of these parasites is widespread, and the risk of reinfection of dogs is great
- Parasites in dogs are classified in to three groups; protozoans, arthropods and helminthes

# Literature review ctd

- Among the helminthes- nematodes, trematodes & cestodes.
- **Nematodes**- are the most common parasites of dogs esp (*Toxocara canis*) and hookworms *(Ancylostoma species*).
- **Trematodes**- icludes; *Paragonimus kellicoti, Alaria spp, Nanophyetus salmincola* and *Heterobilhazia americana*.

# Literature review ctd

- **Cestodes** – includes Cyclophyllidean cestodes (Taenia spp, Dipylidium caninum, Echnococcus spp) and Pseudophyllidean cestodes (*Diphilobothrium latum* Spirometra and Mesocestodes).
- **Protozoa**- includes; Isospora spp, Cryptosporidium spp, Giardia, and Neospora.

# Literature review ctd

- **Blood parasites – T**he most common include *Erhlichia canis*, *Babesia canis*, Trypanosomes.
- (Helminths)Dirofilaria species , Dipetalonema species, Schistosomes,

**Ectoparasites**

- Mainly in the phylum arthropoda- includes species of insects (class: insecta) and mites and ticks (Class: Arachnida; order Acarina).

# Justification

- As of now very few studies have been carried out concerning parasites of dogs in Kenya.

  * Therefore the actual parasitic status of dogs is not known.
- This is despite the fact that parasites in dogs exert serious problems resulting in lowered resistance to infectious diseases, retarded growth, reduced work efficiency and general ill-health.
- Also dogs are host of zoonotic parasites.
- Therefore the study aims at establishing parasite species spectrum, prevalence and their effects on dogs

# Objectives

1. To determine the spectrumof endo- and ectoparasites that are affecting dogs in Nairobi.

2. To establish the intensity of endoparasites of dogs based on parasite load.

3. Determine the pathogenic effects associated with natural endoparasite infections in dogs.

# Materials and methods

**Study area**

- The study will be carried out in Nairobi .

**Study animals**

The study will be carried out using samples collected from dogs presented for either a medical problem or for routine examination at the university of Nairobi small animal clinic, other private small animal clinics in Nairobi county as well as cases presented at the University of Nairobi postmortem room, the other group will be from the Kenya society for the protection and care of animals K.S.P.A.

# Materials and methods ctd

**Sampling**

- The number of samples will be determined by this formula

  $n = Z^2P(1-P) / d^2$

- n- sample size
- Z- Z statistic for the level of confidence (95%)
- Expected prevalence (50%)
- d- precision (5%)

➢ Sample size(n) minimum of 385

# Materials and methods ctd

- Samples obtained from purposively selected veterinary facilities
- Information recorded on each animal

a. Age of the animals
b. Sex of the animals
c. Deworming history
d. Ectoparasite control
e. Clinical picture

*vital parameters (temp, HR, Resp), body condition, appearance of mucous membrane.

f. Use of the animal (pet, guard dog, stray)
g. Diagnosis by the attending veterinarian.

# Materials and methods ctd

- For postmortem cases

a. Age of the animals
b. sex
c. Clinical history
d. Post mortem findings
e. Postmortem diagnosis

# Materials and methods ctd

- **Samples to collect**
  - Fecal samples for both live and postmortem cases
  - Parasites from the gastrointestinal tract at postmortem
  - Parasites from other organs e.g. lungs, heart at PM
  - Ectoparasites from the skin both live and at PM
  - Skin scraping for suspected cases of mange
  - Sample for histopathology taken from organs showing lesions.
  - Blood smears

- Preservation will be done using 70% alcohol for both fecal samples and parasite specimens.

# Materials and methods ctd

**Processing**

**Parasitological procedures**

- Concentration techniques i.e

  fecal flotation using Nacl solution (sp g 1.2).

  fecal sedimentation this will be done using gravity

- This will be followed by microscopic examination
- Samples positive for nematode parasites will be subjected to McMaster technique to determine the egg count.
- Each observed egg or cyst will be identified using their morphological characteristics

# Materials and methods ctd

- For cryptosporidium and Giardia ,Zielhl-Neelsen staining technique will be done on the fecal samples
- For ectoparasites, these will be identified based on their morphological characteristics as described by Soulsby (1982).
- Blood smears will be stained and examined microscopically.
- Worm count for postmortem cases will be determined

# Materials and methods ctd

- **Histopathology procedure**
- Tissue samples will be fixed in 10% formalin , processed routinely for histology and , stained with hematoxylin and eosin
- Then  examined using a light microscope

# DATA MANAGEMENT

- All data will be entered in excel spreadsheet and analysed by Genstat.
- General prevalence and specific prevalence for each parasite will be determined as follows;

  General prevalence (Gp)- Pg/n

  Specific prevalence (Sp)- Ps/n

- The different relationships will be analysed by ANOVA

# Work plan

| Activity | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Proposal writing | | | | xx | xx | xx | xx | | | | | |
| Field work and lab | | | | | | xx | xx | xx | xx | | | |
| Data entry and analyses | | | | | | | xx | xx | xx | xx | | |
| Literature review write up and submission | xx | xx | xx | xx | xx | xx | xx | xx | xx | xx | xx | xx |

# Budget

| ITEM | COST (Kshs) |
|---|---|
| Laboratory reagents chemicals and equipments | 50, 000 |
| Transport | 20,000 |
| Subsistence | 10,000 |
| Literature review | 10,000 |
| Communication | 5, 000 |
| Thesis write up and computer works | 10, 000 |
| Data analysis | 10, 000 |
| Sub total | 115,000 |
| Contingency | 10% |
| **GRAND TOTAL** | **126,500** |

# THANK YOU.