

# Prevalence and Morphometric Profile of Capillariasis in Turkey (*Meleagris gallapovo*) Reared in Semi-Arid Region of Borno State, Nigeria

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## ABSTRACT

A survey was conducted to determine the prevalence, identification and distribution of Capillaria species infecting Turkeys slaughtered in Maiduguri, Borno State, Nigeria from January to November, 2019. A total hundred (100) faecal samples and intestinal scrapings of domesticated Turkeys were examined, the results of differential centrifugal floatation technique revealed that of 29(29%) were infected with a total oocyst of 308. The most common species harvested were Capillariaretusa with a burden of 105(34.0%), Capillariacolumbae 73(27.3%), Capillariabursata 77(25.0%) and Capillariacontorta 53 (17.2%). A total 35 males were examined, out of which 8(22.9%) were infected with an oocyst burden of 108(35.1%) compared to the 65 female examined with 21(32.3%) infected and an oocyst burden of 200(64.9%). However, there was no statistical significant difference in the infection between sexes ( $p>0.005$ ). Prevalence of infection based on the age of Turkeys examined showed that the groups of >12 months Turkeys had 27(29.6%) with an oocyst burdens of 300(97.4%). While Turkeys < 12 months had 8(2.6%) ( $P>0.05$ ). The identification of Capillaria based on their morphometry (egg size in  $\mu$ ) revealed that Capillariaretusa, Capillariacolumbae, Capillariabursata and Capillariacontorta had 56.0 x 23.0, 55.0 x 21.0, 53.0 x 21.0, 53.0 x 20.0

and 50.0 x 20.0 mean sizes (length x breadth in millimetres (mm) respectively. The results of the study indicate the significance of Capillaria species to Turkey production in this Semi-arid zone of Borno state, Nigeria.

**Key words:** semi-arid, capillariasis, prevalence, Turkey, Borno state, reared, Nigeria

## INTRODUCTION

Nigeria, with a land mass of about 923,768 km<sup>2</sup> and an estimated population of 140 million people is predominantly an agrarian and livestock producing nation. Although richly endowed with various species and breeds of livestock farm animal genetic resources (AnGR) are contributing only about 6% of the nation's GDP over the years. In fact, it is a matter of grave concern to all, especially policy makers, that the nation's enormous magnitude of livestock resources does not show the capacity to meet the annual protein needs of the citizenry. The off-take from AnGR in the country has been estimated to provide less than 50% of the FAO recommended target of 35 grams per caud per day of animal-based protein considered necessary for overall good health (AnGR, 2004). Among the major factors affecting the security of breeds within species in the country, are

social and economic disruption, environmental pressures, diseases epidemics such as capillariasis and ignorance (Okunlola, 2007). However, Turkey with population size of 223,363 in Nigeria which is largely found in the semi-arid than middle belt. In livestock production, poultry (Turkey) accounts for 25% of local meat production are deficient in animal protein which results increase in spread of disease and consequently death (Apantaku, 1998). Quite certainly, numerous problems are confronting the Nigeria Turkeys such as low performing breeds, feeding and management, lack of capital and disease such as capillariasis. Turkey infected with low levels of capillaria can serve as sub-clinical carrier (Van Ulsen, et al, 1997). Secondary host of the parasite most important in capillaria infestation are earthworm (Jacob, et al, 1997). Capillaria may or not require an invertebrate intermediate host. Colonization of adult worms in the internal tract with subsequent passing of infective eggs in the faeces complete the lifecycle (De Rosa, et al., 1999). Capillaria infection establish themselves in the crop and intestine of Turkey depending on the capillaria species. Both male and female capillaria are essential for production and transmission of eggs and larvae. According to Tudor and Enigk. 1991, If both male and female capillaria are present, the period of time until eggs are produced varieties from 14-28 days, Heavily infected Turkeys loses appetite and become unthrifty pale and poorly feathered. Affected birds are reluctant to move or fly and unsteady gait. Turkeys exhibit watery diarrhoea and an increase mortality. Weight loss is a significant clinical sign. Adult capillaria produce marked thickening of the intestinal mucosa as the gut living increase mucosa production (Enigk, et al, 1971). The presence of capillaria eggs in the droppings can be used to establish a diagnosis capillaria eggs are quite stable and over winter in the soil. Conclusively there is dearth of data in relation to the capillaria fauna of Turkeys in

Nigeria particularly regarding specie-specific prevalence rates, distribution and this study was designed to identify the common species and their level of prevalence in Maiduguri, Borno state.

## **MATERIAL AND METHODS**

### **Study Area**

The examination of faecal samples and gastro-intestinal tracts was carried out at Parasitology Laboratory of University of Maiduguri located at Latitude 11.15° North and Longitude 30.05° East.

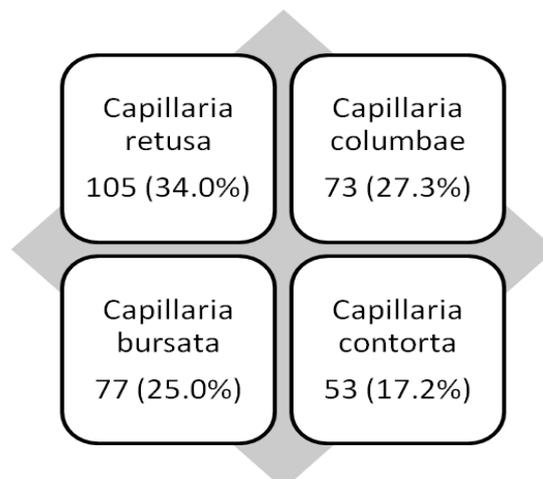
### **Sample collection**

Faecal samples and the whole gastro-intestinal tracts of slaughtered domesticated Turkeys at Maiduguri and its vicinity were collected at the month of September to June 2018. Samples were collected in dry sterile universal bottles to the parasitology laboratory for analysis. The sample (faecal) were examined for capillaria eggs using differential centrifugal flotation technique using saturated sodium solution. whereas, the gastro-intestinal tracts were removed and oesophageal, crop and intestinal mucosa scraping were squeezed between two glass slides and examined using the light microscope to identify adult worms. Differences in the prevalence of infection among turkey examined were analyzed statically using the “t-test” with “p” values equal to or less than 0.005 regarded as significant.

## **RESULTS**

A study to identify and determine the prevalence of capillariasis infecting Turkey was carried out in Maiduguri, Borno State, Nigeria. A total 100 domesticated Turkeys were examined with overall prevalence rate of 29(29.0%) with a total oocyst burden of 308. The common capillaria oocysts harvested were capillariaretusa with burden of 105 (34.0%), capillariacolumbae 73 (27.3%), capillariabursata 77 (25.0%) and contorta 53 (17.2%) of 35 males examined 8 (22.9%) were infected with an oocyst burden of 108 (35.1%) compared to the 55 female

examined with 21(32.3%)infected and a oocysts burden of 200 (64.9%). However, there was no significant difference of infection between sexes (p>0.05).Prevalence of infection based on the age of Turkeys examined showed that the groups of 300 (97.4%), while Turkeys,12 months had 2 (22.2%) with an oocyst of (2.6%) (p>0.005). the identification of Cappilaria based on their morphometry (egg size in UM) revealed that C.retusa, C. columae, C.cotorta had 56.0 ×23.0 mean sizes (length ×breath) in millimeters (mm) respectively. The result of this study indicated that the significance of capillaria species to Turkey production in semi-arid region of Borno State, Nigeria.



**Table 1: Prevalence of Capillariasis and oocysts burdens of Turkey in the study population**

**Table 2: Prevalence of Capillaria species (oocyst harvested) in Turkey by Age distribution of study population**

PARAMETERS AGE GROUP(S) (IN MONTHS)	PREVALENCE OF CAPILLARIASIS IN TURKEYS			
	INFECTION		% of oocyst harvested	
	NO.	%	NO.	%
>12 MONTHS	27	29.6	300	97.4
<12 MONTHS	2	22.2	8	2.6
TOTAL	29		308	100

**Table 3: Prevalence and Identification of Capillaria species based on their morphology and morphometry (egg size in μM) in the study population**

Capillaria examined	Species	Morphometry (size in μM)	Morphology(shape) description
Capillariacolumbae		55.0 x 23.0	Eggs of C. colombae is oval in shape and smaller with a prominent reticulate shell pattern.
Capillariaretusa		56.0 x 21.0	Similarly eggs of capillariaretusa is oval in shape, large in size with pointed interior and exterior end. The shell is thick with fine sculture.
Capillariabursata		53.0 x 21.0	Eggs of C. bursata with a thick shell
Capillariacontorta		50.0x20.0	Eggs of C. contorta are Barrel or lemon shaped with a plug at both ends (operculated)

## DISCUSSION

The study revealed a prevalence of 29% for capillariasis in Turkeys slaughtered in Maiduguri, Nigeria. The fairly high prevalence could be attribute to the free-range practices in this region despite the fact the disease has a definite seasonal pattern. The finding of more (though non-significant) prevalence of infection in adults than the young turkeys reflects the finding that a good immunity develops with increase in age only in some species. The study also revealed that male Turkeys were more commonly infected compare to the female which agrees with the findings of Wehr (1978a) and Soulsby (1986) that male Turkeys are mostly infected due to lack of acquired immunity but also occur in old

Turkeys as carrier or susceptible ones, especially under poor hygienic conditions.

Conclusively, the insufficiency of veterinary attention, poor management practice exposes the Turkey to parasitic hazards with a declamation of poultry, Turkeys production in general. Enlightenment campaigns on seasonal and periodic administration of poultry (Turkeys) with anthelmintic should be emphasized. Government is strongly advice to encourage extension and veterinary to maximize their advocacy towards public health importance.

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How to cite this article: Benisheikh AAG, Kyari F, Muhammed K et.al. Prevalence and morphometric profile of capillariasis in turkey (*meleagris gallapovo*) reared in semi-arid region of Borno state, Nigeria. International Journal of Research and Review. 2020; 7(2): 112-115.

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