



STUDY OF THE INTESTINAL PARASITES OF CHICKENS SLAUGHTERED AT KEFFI MAIN MARKET, NASARAWA STATE, NIGERIA

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ABSTRACT

Chicken provides egg and meat as the vital sources of protein for the human diet compared to other livestock but the production of healthy chickens is affected by the parasites infection causing significant damage and financial loss to poultry farmers. Hence, the aim of this study was to investigate the prevalence of intestinal parasites in chickens slaughtered at Keffi main market from September to December 2022. A total of 163 intestinal contents were collected from 107 males and 56 females slaughtered chickens and examined for the presence of helminth ova and oocysts using floatation and sedimentation methods. The result showed an overall prevalence (51.53%) of infection with males having the highest prevalence (31.90%) than females (19.63%). The nematode species found in males were *Strongyloides avium* (25.23%) and (32.14%) in females as well as *Ascaridia galli* (14.95%) in males and (17.86%) in females. The cestodes species found in male and female chickens was *Raillietina tetragona* with a prevalence of (8.41%) and (7.14%) respectively. A significant correlation ($P < 0.05$) between the parasite infection and sexes was found using the chi-square (χ^2) test. In order to decrease the danger of the disease and boost productivity, it is advised that appropriate management practices, quick deworming with advised medications, and widespread education of poultry farmers on the significance of house hygiene and sanitation be implemented.

Keywords: Chickens, Prevalence, Helminths, Mixed infection, Ova, Deworming

INTRODUCTION

Chickens are the common domestic animals that provide a great source of protein and income to almost every household. Poultry production in Nigeria is fast growing but is faced with various challenges such as a shortage of high-quality feed in terms of quality and quantity, frequent disease outbreaks due to ineffective management, and a lack of understanding of proper breeding techniques (Hunduma *et al.*, 2010). Among the various infectious diseases, parasitic infections may cause significant harm and great financial loss to poultry producers due to malnutrition, decreased feed conversion, weight loss, lowered egg production, and death in young birds. Cestodes, nematodes, and coccidia are some of the main internal parasite infections in chickens, with mixed infections being particularly prevalent (Poulsen *et al.*, 2000). The helminth parasites are known to compete with the host chickens for nutrients with the host chickens and thereby cause inflammation and lesions in the intestinal tract and this interferes with digestion and assimilation of nutrients by the host. Similarly, in various African countries, chicken production is said to generate over USD 5.75 billion annually (FAO, 2010). Malnutrition, poor management practices, and disease-causing agents involving viruses, bacteria, and parasites have been linked to increased mortality in chicken production in African countries (FAO, 2010). Therefore, this research was conducted to find out how common internal parasites were in chickens slaughtered in Keffi Main, Nigeria.

MATERIALS AND METHODS

Study Area

This study was carried out in Keffi main market, Nasarawa State, Nigeria, which is situated between 80° 50' North latitudes and 70° 50' East longitudes. The area is located some 58 Km away from the Federal Capital Territory Abuja. According to the NPC (2006), Keffi town has an approximate population of 92,664 people.

Fecal Sample Collection and Analysis

Ten (10) intact whole guts were collected for the period of four months (September-December, 2022) at weekly intervals. The consent of sellers and buyers was requested before the slaughter. The samples collected were placed in a sterile container and transported to the laboratory for analysis. About 1.0g of each of the preserved fecal samples was processed using floatation (Dryden *et al.*, 2005) and sedimentation methods (Gibbons *et al.*, 2018) in combination with distilled water. Parasite eggs were examined for the presence of ova, cysts, and larvae under a light microscope at 10x and 40x objectives.

Sorting and Parasites Identification

The parasites found were sorted into species levels using a pair of forceps and magnify hand lens. The specimens were preserved in sterile labeled vials of formalin (10%) and counted accordingly. Identification of the gastrointestinal helminth parasites was done according to the helminthological keys (Beugnet, 2008).

Statistical analysis

The data collected were subjected to descriptive analysis using SPSS software version 23. The chi-square (χ^2) test was performed to determine the correlation between parasite species and the prevalence of infection among the chickens examined. $P < 0.05$ was considered significant at a 95% confidence interval.

RESULTS AND DISCUSSION

Results

A total of 163 chickens were examined. The result indicates that 51.5% of the samples tested positive for the eggs of one or more helminth parasites. According to the results, 32 out of 56 female hens and 52 out of 107 male chickens (out of 107 total) tested positive for the virus (Table 1). However, the number of infected hens and their gender, as well as the overall prevalence of infection with gastrointestinal helminths, varied significantly.

Table 1: Prevalence of intestinal parasites of chicken in relation to sex

Sex	No. Screened	No. Infected	Prevalence (%)
Male	107	52(31.9%)	31.9
Female	56	32 (19.6%)	19.6
Total	163	84(51,5%)	51.5

$\chi^2 = P < 0.05$

Table 2 shows the various helminth species found in male and female chickens. The result indicates that while females had an infection rate of 32.14%, males had a prevalence of 25.23% for *Strongyloides avium*. Both male and female chickens had *Ascaridia galli*, with prevalences of 14.95% and 17.86%,

respectively. With prevalence rates of 8.41% and 47.14%, the cestode *Raillietina tetragona* was also found in male and female hens (Table 2). There was a correlation between parasite infection and sex at a 0.05 probability level.

Table 2: Species composition of intestinal parasites of chickens

Parasite species	Male	Female
	No. Infected	No. Infected
Nematodes		
<i>Strongyloides avium</i>	27(25.23%)	18(32.14%)
<i>Ascaridia galli</i>	16(14.95%)	10(17.86%)
Cestodes		
<i>Raillietina tetragona</i>	9(8.41%)	4(7.14%)
Total	52(48.59%)	32(57.14%)

$\chi^2 = P < 0.05$

Table 3 shows that out of 107 male chickens examined, 16.82% of the male chickens had a single infection, compared to 31.78% of mixed infections. Similar results were reported when 56 female hens were tested; 44.64% had mixed

infections and 12.50% had single infections. As a result, Table 3 shows that the overall prevalence of mixed and single infections was 76.42% and 29.32%, respectively.

Table 3: Relative abundance of parasites of chickens in relation to infection

Sex	No. Examined	Mixed Infection	Single Infection
Male	107	34(31.78%)	18(16.82%)
Female	56	25(44.64%)	7(12.50%)
Total	163	59(76.42%)	25(29.32%)

$\chi^2 = P < 0.05$

Discussion

According to the findings of this study, the overall prevalence of chickens infected with one or more gastrointestinal helminth parasite species was 51.53% as compared with 96.3% recorded by Fakae and Paul-Abiade. (2003). As a result, the chickens under investigation carried a variety of gastrointestinal helminth parasites, which is one of the main causes of early chick death and adult production losses (Nnadi and George, 2010). Our findings also differed from those of Rufai and Jato (2017), who recorded a 62% success rate in their work at Iwo, Osun State, Nigeria, and Junaidu and Mijinyawa (2014), who reported a 60% success rate in their work at Giwa Local Government Areas of Kaduna State, Nigeria. Hussien *et al.* (2012), however, recorded a 20.5% less prevalence found in Akure research. This reduced prevalence may be a result of the study's very modest sample size of only 85 chickens.

The findings of this investigation also showed that the leading helminth parasite species detected in this study were *Strongyloides avium*, *Ascaridia galli* from nematodes, and *Raillietina tetragona*, a cestode. This observation was consistent with the findings of Afolabi *et al.* (2016) who found that helminth parasites commonly infect scavenging chickens all over the world. *A. galli* was most common in local hens, while Hussien *et al.* (2012) also noted a high incidence of helminths in poultry (72.0%). The prevalence differences between studies may be caused by the fact that chickens raised in free-range environments roam around in search of the nutrients they need, and they typically forage for food in the top layers of the soil, which are contaminated with

various living things, such as insects or earthworms that act as intermediate or parasitic hosts of helminths (Katoch *et al.*, 2012). This may increase the likelihood of becoming infected. The reason why male chickens have a higher prevalence may be because they eat more voraciously than females, who are still primarily selective (Matur *et al.*, 2010).

CONCLUSION

In conclusion, three distinct species of gastrointestinal parasites, including *Strongyloides avium*, *Ascaridia galli*, and *Raillietina tetragona*, were found in both male and female chickens throughout the study. Therefore, in order to preserve hygienic conditions for profitable chicken production and secure consumption of meat and eggs in the area, the greater incidence of infection identified in the study area required urgent attention, such as a regular deworming plan and other control management methods.

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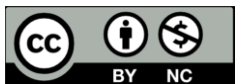
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CONFLICT OF INTEREST

The authors declare that they have no conflict of Interest.

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