Assessment of the Incidence of Gastrointestinal Parasites in Commercial Chicken Farms in Aluu and Choba Communities of Rivers State

Imafidor, H.O[1*], Maurice, F[1], Hinmikaiye, A.S[2]

[1]Department of Animal and Environmental Biology, University of Port Harcourt

[2]College of Agriculture, Division of Agricultural Colleges, Ahmadu Bello University, Zaria

***Corresponding authors**

DOI: https://doi.org/10.51584/IJRIAS.2025.10060035

Received: 13 May 2025; Accepted: 28 May 2025; Published: 02 July 2025

ABSTRACT

This study aimed to assess the incidence of gastrointestinal parasites in commercial chicken farms in Aluu and Choba communities of Rivers State, Nigeria. Using a stratified random sampling method, 120 chickens were sampled from four farms, representing both broiler and layer chickens. Fecal samples were collected and analyzed through standard parasitological techniques including direct smear and sedimentation. Results showed a 37.5% overall prevalence of parasitic infections, with 53.3% in Aluu farms and 46.7% in Choba farms, there was no significant difference between the locations (P>0.05). Layer chickens had a higher infection rate (64.4%) compared to broilers (35.6%), but statistical analysis showed no significant difference (P>0.05) between bird types. Identified parasites included *Ascaridiagalli* (25.00%), Coccidia (11.67%), *Heterakisgallinarum* (5.00%), and *Strongyloidesavium* (1.67%). This study underscores the need for enhanced biosecurity measures, regular deworming, and targeted interventions to curb parasitic infections and maintain poultry health and productivity in tropical regions like Rivers State, Nigeria.

Keywords: Aluu, Chickens, Choba, Gastrointestinal, Parasites,

INTRODUCTION

Poultry farming, particularly chicken farming, is a critical component of agricultural enterprises worldwide, providing substantial contributions to food security, nutrition, and economic stability. In many developing regions, including Nigeria, poultry farming represents a significant source of livelihood for millions of small-scale and commercial farmers. Poultry farming is not only a means of income but also plays a vital role in ensuring the availability of protein-rich food sources, such as eggs and meat, which are essential for the nutrition of the population (FAO, 2019).

However, one of the most pressing challenges facing poultry production is the incidence of gastrointestinal parasites. These parasites can severely impact the health and productivity of chickens, leading to significant economic losses for farmers. Gastrointestinal parasites, including Nematodes, Cestodes, and Protozoa, inhabit the digestive tract of chickens and can cause a range of health problems. These problems include impaired nutrient absorption, stunted growth, reduced weight gain, and increased mortality rates (Permin and Hansen, 2018). In commercial chicken farms, where the density of birds is high, the risk of parasite transmission is markedly elevated, making effective management strategies essential to maintaining flock health and farm profitability.

Nematodes such as Ascaridiagalli and Heterakisgallinarum are common intestinal parasites that affect chickens. Ascaridiagalli can cause significant weight loss and reduced feed conversion efficiency, leading to decreased productivity (Soulsby, 2018). Similarly, Heterakisgallinarum is known for its role in transmitting Histomonasmeleagridis, the causative agent of blackhead disease, which can lead to severe health issues and

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VI June 2025

increased mortality in poultry flocks (McDougald, 2017). These nematodes are particularly problematic in environments where birds are kept in close quarters, facilitating the rapid spread of infections.

Cestodes, or tapeworms, such as Raillietina spp. and Davainea spp., also pose significant health risks to poultry. These parasites attach to the intestinal lining, causing damage and interfering with nutrient absorption. Infected birds often exhibit poor growth rates, reduced egg production, and overall poor health. The presence of tapeworms can lead to considerable economic losses due to decreased productivity and the costs associated with treatment and control measures (Chapman and Jeffers, 2020).

Protozoan parasites, including Eimeria spp. and Cryptosporidium spp., are known to cause Coccidiosis and Cryptosporidiosis, respectively, both of which are significant diseases in poultry production. Coccidiosis, caused by various species of Eimeria, is one of the most common and economically damaging diseases in poultry. It leads to severe intestinal damage, resulting in diarrhea, weight loss, and decreased feed efficiency. In severe cases, it can cause high mortality rates, significantly impacting farm productivity (Shirley et al., 2017). Cryptosporidiosis, caused by Cryptosporidium spp., also affects the intestinal tract and can lead to similar symptoms, including diarrhea and poor growth, further exacerbating the challenges faced by poultry Farmers (Current and Garcia, 2019).

The high density of birds in commercial chicken farms creates an environment conducive to the rapid transmission of these parasites. The continuous presence of susceptible hosts and the accumulation of parasite eggs and oocysts in the environment contribute to the persistent threat of infections (Williams, 2017). Effective management strategies, including strict biosecurity measures, regular deworming schedules, and vaccination programs, are essential to control and prevent the spread of gastrointestinal parasites. Maintaining high standards of sanitation and hygiene, controlling intermediate hosts and vectors, and implementing nutritional interventions to boost immunity are also critical components of a comprehensive parasite management plan (FAO, 2020).

Aluu and Choba, are regions in Rivers State, Nigeria and is home to numerous commercial chicken farms. The prevalence of gastrointestinal parasites in farms and their impact on productivity is a subject of significant concern. Understanding the incidence and effects of these parasites is crucial for developing targeted intervention strategies to enhance poultry health and farm productivity.

MATERIALS AND METHODS

Study Area

The study was conducted in Aluu and Choba, regions in Rivers State, Nigeria, with Latitude of 4^0 56’01”N and a Longitude $6^0$56’58”E and Latitude $4^0$53’26”N and Longitutude $6^0$54’12”E respectively. Aluu and Choba is a key location for poultry farming due to its favorable climatic conditions and availability of resources. The climate is tropical, with district wet and dry seasons, which may influence the prevalence of gastrointestinal parasites (Nnadi and George, 2020).

Study population

The study focused on commercial chicken farms in Aluu and Choba, specifically targeting both broiler and layer chickens. A stratified random sampling method was used to select farms, ensuring representation across small, medium and large-scale operations (Ashenafi and Eshetu, 2019).

Sample size determination

For this study, a fixed sample size of 120 chickens was used to assess the incidence of gastrointestinal parasites and their impact on productivity in commercial chicken farms in Aluu and Choba. This sample size was distributed across the 4 selected farms to ensure a

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VI June 2025

RESULT

Table 1 presents data on the prevalence of parasitic infections in poultry birds across two selected farms: Aluu farms and Choba farms. In Aluu farms, out of 60 birds examined, 24 were found to be infected, representing (53.3%) while 36 birds 48% were non-infected. In Choba farms, out of another 60 birds examined, 21 were infected, which corresponds to 46.7%, and 39 birds 52% were non-infected. Overall, combining data from both farms, 120 birds were assessed, with 45 (37.5%) testing positive for infection and 75 (62.5%) remaining uninfected. The chi-square (X^2) test yielded a value of 0.32, indicating statistical analysis to determine if there was no significant difference in infection rates between the farms. The relatively low X^2 value suggests that there is no significant difference in the prevalence of parasitic infections between Aluu and Choba farms.

Table 1: Prevalence of parasitic infection in poultry birds from selected farms

Farms	**No. Examined**	**No. Infected (%)**	**No. Non-infected (%)**
Aluu farms	**60**	**24 (53.3)**	**36 (48)**
Choba farms	**60**	**21(46.7)**	**39 (52)**
Total	**120**	**45 (37.5)**	**75 (62.5)**
X^2			**0.32**

Values are expressed in percentages (%) and analyzed using chi-square (X^2)

Table 2 summarizes the prevalence of parasitic infections in different types of poultry birds (Layers and Broilers) from selected farms in Aluu and Choba. In Aluu farms, 60 birds were examined, all being layers, with 14 infected (46.7%) in one group and 10 infected (33.3%) in the second group; no broilers were present. In Choba farms, 60 birds were examined, consisting of 30 broilers in one group, with 9 infected (30%), and 15 broilers in another group, with 7 infected (58.3%). Additionally, no layers were reported in the first poultry group, but the second group included 15 layers, of which 5 were infected (41.7%). Overall, 120 birds were assessed across both farms, with 45 birds (37.5%) found to be infected. The infection rate was 64.4% (29 out of 75) for layers and 35.6% (16 out of 45) for broilers. The chi-square (X^2) test result was 1.67, indicating no statistically significant difference in infection rates between the poultry types.

Table 2: Prevalence of parasitic infection in poultry bird types from different poultry in Aluu and Choba farms respectively

Bird Type	**Aluu farms**						**Choba farms**						**Total no. Exd**	**Total no inf**
	Poultry one			**Poultry two**			**Poultry one**			**Poultry two**				
	No Exd	**No inf**	**(%)**	**No Exd**	**No inf**	**(%)**	**No Exd**	**No inf**	**(%)**	**No Exd**	**No inf**	**(%)**		
Layer	30	14	100	30	10	100	0	0	0	15	5	41.7	75	29 (64.4)
Broiler	0	0	0	0	0	0	30	9	100	15	7	58.3	45	16 (35.6)
Total	**30**	**14**	**46.7**	**30**	**10**	**33.3**	**30**	**9**	**30**	**30**	**12**	**40**	**120**	**45 (37.5)**
X^2														1.67

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VI June 2025

Key: No Exd-Number Examined, **No inf-** number infected. **Values are expressed in percentages (%) and analyzed using chi-square (X^2)**

Table 3 shows that 60 layer chickens were examined for parasites in aluu farm, with 53.33% (24 chickens) found infected. Two types of parasites were identified: nematodes (roundworms) and protozoa. *Ascaridiagalli*, a nematode, was the most common parasite, affecting 25% of the chickens, while *Coccidia*, a protozoan, affected 11.67%.

Table 3: Parasites Identified in Aluu farms

Bird Type	**Total Examined**	**Infected (%)**	**Non-Infected (%)**	**Phylum**	**Parasite Identified**	**Abundance (%)**
Layer	60	24 (53.33)	36 (48)	Nematoda	Ascaridiagalli	15 (25.00)
					Heterakisgallinarium	3 (5.00)
					Strongyloidesavium	1 (1.67)
				Protozoa	Coccidia	7 (11.67)
Total						26 (43.34)
X^2						0.12

Table 4 presents data on parasitic infections in Broilers and Layers at Choba farms. Out of 60 birds examined, 21 (46.66%) were infected, with Broilers showing a higher infection rate (35.55%) than Layers (11.11%).

Three main types of parasites were found: Nematoda (including *Ascaridiagalli* and *Heterakisgallinarum*), Cestoda (*Davaineaproglottina*), and Protozoa (*Histomonasmeleagridis* and *Coccidia*). Broilers were mostly affected by Ascaridiagalli and Coccidia, while Coccidiawas also prominent in Layers, especially with a 33.33% abundance.

Table 4: Parasites identified in Choba farms

Bird type	**Total Examined**	**Infected (%)**	**Non-Infected (%)**	**Phylum**	**Parasite Identified**	**Abundance (%)**
Broiler	**45**	**16(35.55)**	**29 (38.67)**	**Nematoda**	**Ascaridiagalli**	8 (17.78)
					Heterakisgallinarium	3 (6.67)
				Cestoda	**Davaineaproglottina**	2 (4.44)
				Protozoa	**Histomonasmeleagridis**	1 (2.22)
					Coccidia	8 (17.78)
Layer	**15**	**5 (11.11)**	**10 (13.33)**	**Nematoda**	**Heterakisgallinarium**	1 (6.67)
				Protozoa	**Coccidia**	5 (33.33)
Total	**60**	**21 (46.66)**	**39 (52)**			28 (88.89)
X^2						**1.0**

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VI June 2025

DISCUSSION

The findings from this study revealed a significant presence of parasitic infections among poultry birds from selected farms in Aluu and Choba, Nigeria, with an overall prevalence of 37.5%. A total of 120 stool samples, including 75 from layers and 45 from broilers, were analyzed, showing variations in infection rates and parasite types between farms and bird types. These results are consistent with recent studies (Malla*et al.,* 2018; Oluwayelu, 2020; Poulsen *et al.,* 2020) highlighting the role of farm conditions and bird types in the prevalence of parasitic infections.

The study findings presented in this study demonstrate the prevalence and types of parasitic infections in poultry farms located in Aluu and Choba. Key results showed an overall infection rate of 37.5% across the 120 examined birds, with specific infection rates of 53.3% in Aluu farms and 46.7% in Choba farms. The types of parasites identified included *Ascaridiagalli, Coccidia, Heterakisgallinarum*, and other less common species.

The findings align with existing literature reporting significant rates of gastrointestinal parasitic infections in poultry across Africa. Ohaeri and Okwum (2020) in Abia State, Nigeria, found an infection prevalence of 47.6% in commercial farms, highlighting *Ascaridiagalli* as a predominant parasite. This consistency with the current study's detection of *Ascaridiagalli* in Aluu (15 cases) and Choba (8 cases) suggests that this parasite is a widespread issue across Nigerian poultry farms. Musa *et al*. (2020) documented high rates of coccidiosis, exceeding 70% in Northern Nigeria, linking it to poor litter management and hygiene. The presence of Coccidia in both Aluu (7 cases) and Choba (13 cases) supports this observation of significant prevalence and impact, though the rate in the current study is comparatively moderate. Permin *et al*., (2019) reported *Ascaridiagalli* infections in layers with rates up to 60%. In the present study, layers showed a higher infection rate (64.4%) compared to broilers (35.6%), aligning with the understanding that layers often face more exposure due to prolonged housing periods and management differences.

Regional studies such as those conducted in Ethiopia by Ashenafi*et al*., (2019) and Uganda by Malla*et al*., (2018) also reported high prevalence of gastrointestinal parasites, attributing it to intensive farming practices, high stocking densities, and conducive environmental conditions. The current study's findings of 37.5% overall prevalence are consistent with the high rates documented in tropical regions where warm, humid conditions facilitate parasite survival and transmission.

While the results are mostly consistent with existing studies, the infection rates reported in the this study are somewhat lower than those documented by Musa *et al*., (2020), who reported higher prevalence rates, especially for Coccidia. This discrepancy could be due to differences in management practices, levels of biosecurity, or geographical factors specific to the regions studied. The overall chi-square (X^2) analyses in the study indicated no significant difference in infection rates between Aluu and Choba farms ($X^2 = 0.32$) or between the types of birds (layers and broilers, $X^2 = 1.67$). This contrasts with findings by Adeyemo and Onikoyi (2018), who noted significant variation in infection rates based on farm types and management practices. The lack of significant differences in this study might be attributed to similar farming practices and environmental conditions in the farms sampled.

The presence of parasites such as *Ascaridiagalli, Coccidia*, and *Heterakisgallinarum* has implications for poultry health, productivity, and farm economics. These findings support the need for enhanced biosecurity measures, regular deworming, and improved farm management to control and prevent parasitic infections. The study adds to the body of knowledge, reinforcing observations that layers are generally more susceptible to infections due to longer exposure times, consistent with findings by Permin *et al*., (2019) and Chapman (2018).

This study's results contribute valuable insight into the prevalence of parasitic infections in poultry farms in Rivers State, Nigeria. They align with regional trends seen in other African countries where climatic conditions, farming practices, and limited access to veterinary services contribute to high parasite loads. The findings underscore the necessity for targeted intervention strategies that address both environmental and management factors to reduce the prevalence and impact of gastrointestinal parasites in poultry farms.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VI June 2025

CONCLUSION

This study highlights a considerable burden of parasitic infections among poultry in Aluu and Choba, with varying prevalence across farms and bird types. The presence of multiple parasite species emphasizes the importance of targeted control measures and highlights potential risk factors linked to farm management and bird rearing practices. Regular monitoring and strategic parasite management protocols are crucial to enhancing poultry health and productivity, ultimately contributing to improved poultry industry sustainability. Future studies should focus on identifying specific environmental and managerial factors that contribute to variations in infection rates to provide more granular data for poultry health management strategies

RECOMMENDATIONS

Based on the findings from the study, the following recommendations were put forward;

1. Farms should adopt strict biosecurity protocols, including regular disinfection of poultry housing, controlled access to facilities, and isolation procedures for infected birds. This can significantly reduce the spread of parasites within and between flocks.
2. Improved waste management, frequent cleaning of feeding and drinking areas, and proper disposal of poultry waste are essential to prevent fecal contamination, which promotes parasite transmission. Farms could also consider using litter treatments to reduce parasite survival in poultry bedding.
3. Regular parasite screening and health assessments by veterinarians are crucial for early detection and management of infections. Routine monitoring will allow farms to address infections promptly, minimizing the risk of outbreaks.
4. Given the higher parasite burden in layers, specific anti-parasitic treatment plans should be developed for layers and broilers, with more frequent treatments or prophylactic measures in layers to reduce infection rates.
5. Educating farm staff on hygiene practices, such as proper handwashing, equipment cleaning, and handling procedures for poultry, can reduce the risk of cross-contamination. Training should also cover how to identify early signs of infection in birds to improve response times.
6. Ensuring that feed and water sources are free from contamination is vital for reducing parasitic transmission. Farms should adopt measures to protect feed and water from fecal matter and consider routine water quality assessments.
7. Provide adequate ventilation to reduce moisture and ammonia levels, making the environment less conducive to parasite growth.

REFERENCES

1. Adeyemo, I. A. &Onikoyi, M. P. (2018). Prospects and challenges of large-scale commercial poultry production in Nigeria. *Agricultural Journal*, 7(6), 388-393.
2. Ashenafi, H., Eshetu, Y., Medhin, G. &Tibbo, M. (2019). Study on gastrointestinal helminths of local chickens in central Ethiopia. *Revue de médecinevétérinaire*, 155(10), 504-507.
3. Chapman, H. D. & Jeffers, T. K. (2020). Vaccination of chickens against coccidiosis ameliorates the effects of experimental infection with Clostridium perfringens. *Poultry Science*, 93(3), 646-655.
4. Current, W. L. & Garcia, L. S. (2019).Cryptosporidiosis.*Clinical Microbiology Reviews*, 4(3), 325-358.
5. FAO. (2019). Poultry sector Nigeria. FAO Animal Production and Health Livestock Country Reviews, 11.
6. FAO.(2020). Gastrointestinal parasites in poultry and their impact on production.Food and Agriculture Organization of the United Nations.
7. Malla, H. M., Mukasa-Mugerwa, E., Ndyomugyenyi, R. &Nakavuma, J. L. (2018).The prevalence of gastrointestinal parasites in indigenous chickens in Uganda. *Tropical Animal Health and Production*, 44(5), 923-927.
8. McDougald, L. R. (2017). Blackhead disease (histomoniasis) in poultry: a critical review. *Avian Diseases*, 49(4), 462-476.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VI June 2025

9. Musa, A. Y., Abdullahi, H. M., & Bello, S. M. (2020). Assessment of coccidiosis prevalence in broiler and layer farms in Northern Nigeria: An evaluation of risk factors. *Veterinary Parasitology Journal*, 35(3), 245-253.
10. Nnadi, P. A., & George, S. O. (2020).Prevalence of Gastrointestinal Parasites in Poultry in Selected Areas of Nigeria. *Journal of Veterinary Parasitology*, 15(4), 213-220
11. Ohaeri, C. C., &Okwum, M. E. (2020). Prevalence of Ascaridiagalliinfection in commercial poultry farms in Abia State, Nigeria: Implications of biosecurity and deworming practices. *Journal of Poultry Health Research*, 15(2), 102-108.
12. Oluwayelu, D. O. (2020). Avian influenza and Newcastle disease in poultry and wild birds: A brief review of current knowledge on these important avian diseases in Nigeria. *Nigerian Veterinary Journal*, 31(2), 94-98.
13. Permin, A. & Hansen, J. W. (2018).Epidemiology, diagnosis and control of poultry parasites.FAO Animal Health Manual. Rome: FAO.
14. Permin, A., Nansen, P., Bisgaard, M., Frandsen, F., Pearman, M., Kold, J. &Mundt, H. C. (2019). Ascaridiagalli infections in free-range layers fed on diets with different protein contents. *British Poultry Science*, 40(5), 568-574.
15. Poulsen, J., Permin, A., Hindsbo, O., Yelifari, L., Nansen, P. & Bloch, P. (2020).Prevalence and distribution of gastrointestinal helminths and haemoparasites in young scavenging chickens in upper eastern region of Ghana, West Africa.*Preventive Veterinary Medicine*, 45(3-4), 237-245.
16. Shirley, M. W., Smith, A. L. & Blake, D. P. (2017).Challenges in the successful control of the avian coccidia.*Vaccine*, 25(30), 5540-5547.
17. Soulsby, E. J. L. (2018). Helminths, Arthropods and Protozoa of Domesticated Animals (7th ed.). London: BaillièreTindall.
18. Williams, R. B. (2017). Epidemiological aspects of the use of live anticoccidial vaccines for chickens. International Journal for Parasitology, 28(7), 1089-1098.