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RESEARCH ARTICLE

Prevalence, risk factor, control and dwelling of *Ascaridia galli* in the gut of chickens

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ABSTRACT

Ascaridia galli infection compromises the health and productivity of chickens. this study aimed to determine the prevalence, pathology, and control of *A. galli* in backyard chickens. Four hundred and fifty-six faecal samples were tested using direct smear and concentration techniques. sixty chickens were grouped based on egg per gram into untreated control, mebendazole-treated, and derivative-treated. Key epidemiologic host based and environmental variables were recorded and analysed statistically ($p < 0.05$ significance level). Histopathological changes in the intestine were also assessed. Overall prevalence of *A. galli* was 72% (330/456). Infection was high in females (74%, 200/267) than in males (68%, 130/189). Adult chickens had a higher infection rate than young (64% vs 55%; $p < 0.05$). Weak chickens showed a markedly higher prevalence (96%, 150/156) than healthy chickens (60%, 180/300) ($p < 0.05$). Geographically, prevalence was highest in Swat (85.53%), followed by Lower Dir (72.3%) and Malakand (59.21%), with statistically significant differences ($p < 0.05$). Management system influenced infection: free range chickens had (63%) compared to semi-free range (37%), scavenging chickens were more infected (75%) compared to receiving supplemental feed (53%) ($p < 0.05$). The non-dewormed chickens had a significantly higher prevalence (92%) than the dewormed group (20%) ($p < 0.05$). Seasonal infection peaked during the rainy season (86%) compared to the dry season (44%) ($p < 0.05$). Intestinal histology revealed inflammation, epithelial necrosis, villous atrophy, and crypt hyperplasia. Treatment of the chickens nematodes using mebendazole resulted in 70% (14/20) of the treated eggs being egg-negative, and the comparison of treatment of the egg-negative derivative compound resulted in 80% (16/20) of the treated eggs being egg-negative. The *A. galli* infection are very common, and cause intestine damage. The mebendazole and its derivative decrease egg shedding significantly, Husbandry, management and treatment should be enhanced for effective control strategies.

Keyword: *A. galli*; pathology; epidemiology; treatment; backyard chicken's histopathology.

INTRODUCTION

Domestic chickens (*Gallus gallus domesticus*) were originally domesticated chickens of the red jungle fowl in Asia around 5,000 years ago (Eda, 2021). They have been a component of rural livelihood over the centuries, and they provide eggs, meat, feathers, and are often involved in traditional ceremonies (Wong *et al*., 2024). The Poultry produce today is one of the most consumed animal foods sources in the world (Govoni *et al*., 2021). The poultry industry in the developing countries contributes up to 40% of all the animal protein intake in the country (Cao & Li, 2013).

Poultry production is one of the more accessible and lucrative livestock enterprises with both nutritional and income generating capabilities (Wahyono & Utami, 2018). The backyard poultry in poor rural settings is a dual purpose system wherein it provides both an instantaneous source of protein at the family level and an instant source of monetary income (Dehau *et al*., 2022). In Pakistan, as an example, the agricultural sector, to which the poultry sector is a fraction, contributes some 26% of gross domestic product (GDP) and takes up a significant portion of the population (Rehman *et al*., 2017).

Backyard poultry, which comprises mostly local breeds, fulfils this role, though suffering from a number of challenges based on disease, particularly parasitic ones (Siddiqui *et al*., 2024). They infect via contaminated soil, faeces, or intermediate hosts, and cause chronic loss that minimizes growth, sickness, and loss of productivity (Wongrak *et al*., 2014).

Common genera of parasitic nematodes in chicken include *Heterakis gallinarum, A. galli*, and *Capillaria* spp., which affect various parts of the intestinal tract and have different pathological consequences (Ara *et al*., 2021). Among these *A. galli* is the most important one, as it has the strongest influence on the health of the host. It has a direct life cycle where chickens are infected by consuming embryonated eggs, and the larvae hatch in the proventriculus or small intestine (Sarba *et al*., 2019).

The larvae then proceed to pass through the histotrophic stage in the crypts or in the gut wall and become adults in the lumen (Shohana *et al*., 2023). The average pre-patent period is usually 48 weeks, depending on the environmental factors and earth worm, facilitate egg dispersal, or serve as mechanical carriers (Hoglund *et al*., 2023).

Pathologically, *A. galli* damages the intestines via larvae and adults, causing mucus, haemorrhages, necrosis, villous atrophy, and possible intestinal blockage (Abbas *et al*., 2024). These lesions result in impairment of nutrient absorption, reduced feed conversion efficiency, lowered growth, anaemia, and suppressed immunity, which commonly predispose chickens to secondary infections (Nemathaga *et al*., 2023).

Infected chicken may also die of the illness in severe instances, although it may present clinically with diarrhoea, weight loss, decreased egg production, dull feathers, and in extreme cases, death (Ritu *et al*., 2023). *A. galli* is mainly controlled by anthelmintic chemotherapy, the most common drugs against *A. galli* are mebendazole, albendazole, levamisole, piperazine, Ivermectin, and fenbendazole (Hafiz *et al*., 2015).

To date, there is no commercially viable vaccine. However, resistance to certain anthelmintics, particularly in benzimidazole and piperazine classes, has been reported in some regions (Shirin *et al*., 2025). In Pakistan, although *A. galli* is known to occur, there remains a paucity of comprehensive data detailing its epidemiology, the extent of pathological damage (gross and histological) in indigenous backyard chickens, and the efficacy (or resistance) of commonly used anthelmintic treatments (Ture *et al*., 2019).

A. galli is not directly zoonotic, but poses significant indirect risks in poorly managed, unhygienic backyard chickens (Hosseinian, 2022). Domestic chickens suffering from *ascaridiasis* are more prone to secondary infections with the zoonotic bacterium Salmonella (Al-Tayib, 2019). Irregular anthelmintic drugs may lead to residues in egg or meat, posing a risk to human health (True *et al*., 2019).

Therefore, this study aims to estimate prevalence, risk factor, control and dwelling of *A. galli* in the gut of chickens. The ultimate goal is to generate a baseline that can inform more effective control strategies, improve poultry health, and reduce productivity losses due to *ascaridia* infections in indigenous flocks in Pakistan.

MATERIALS AND METHODS

Ethical standards

This was granted under the Institutional Bioethics Committee (IBC) of the University of Malakand (Ref: No: UOM/Admin/2023/3125).

Study area

A cross-sectional study assessed nematode infections in domestic chickens in Lower Dir (34°22'N–35°50'N, 71°02'E–72°32'E, with approximately 1420 mm annual rainfall), Swat (34°30'N to 35°50'N, 72°05'E to 72°50'E, experiencing cold temperatures), and Malakand (around 34.5656°N, 71.9304°E, with mild summers and cold winters).

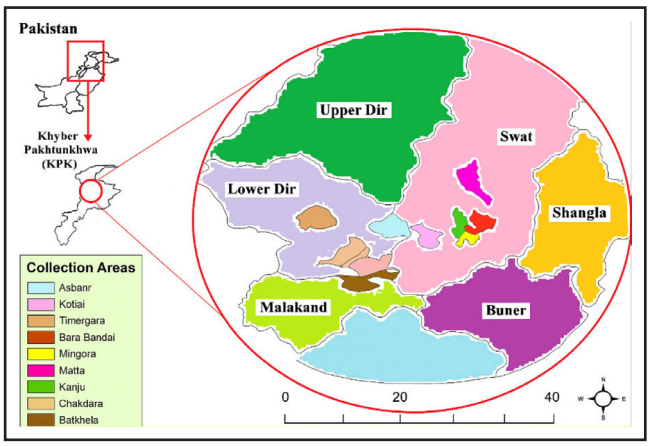

Figure 1. Self-created map of the study area (Malakand region), created with ArcGIS.

These are part of Malakand Division and north Khyber Pakhtunkhwa (around 35.2°N, 71.9°E). The temperate climate of the region, including hot and humid summers because of the monsoon rains, and cold winters in the higher elevations, favor the parasitic infections.

Study population

This study was conducted on the domestic chickens. In poor families, the domestic hens are kept under free-range or semi-intensive management strategies (Naqvi *et al*., 2017).

Sample size and sampling technique

A standard formula was used to determine the sample size, n = Z 2 P (1 P) / d 2, where Z 2 is the 95% confidence level, P is the expected prevalence (estimated at 50%), and d is the absolute precision (0.05). Gave a minimum sample size of 385. Nonetheless, four hundred and fifty-six domestic chickens were examined to guarantee robustness (Daniel & Cross, 2019).

Data collection and study design

Host based data like gender (Male or Female), Age (adult > six months or young < six months). More so, body condition (weak or healthy) was listed based on physical appearance of chickens and condition of faecal samples. Also, the management data, including the housing, rearing and feeding system, deworming, were also captured in a questionnaire by the chicken caretaker. The time of sample collection was stratified into dry (March to May, November to February) and rainy (June to October) seasons.

Samples collection and preservation

The present survey, with a couple of experiments, was conducted from January to December 2024. Three to five grams of faeces were meticulously taken from each chicken's rectum. Bottles with labels and 70% formalin as a preservative were used to gather fresh samples. Moved to the University of Malakand lab and kept at 4°C for further examination.

Laboratory analysis

Faecal samples were analysed using direct smear and indirect techniques such as flotation and centrifugation. A faeces of 1–2 g was mixed with 40 mL of saturated salt solution, homogenized, and filtered through a wire mesh. The filtrate was then centrifuged. The supernatant was poured into a clean test tube to form a meniscus. A coverslip was carefully placed on the meniscus and allowed to stand for 12–20 minutes. The coverslip was replaced with a lot of care and was observed under a light microscope on a slide to check the presence of *Ascaridia* eggs (Kowalewska-Grochowska *et al*., 2025).

Identification of *A. galli*

The identification of *A. galli* egg under the microscope was conducted through typical morphological features such as size, shape and diagnostic features, relying on available taxonomic keys, while molecular identification was not done due to limited resources, although the identification was found to be reliable by morphological identification.

Egg per gram count (EPG)

The McMaster slide chamber was filled with the filtered suspension through a pipette, and carefully covered with a cover slip. Then observed under a light microscope at 10× and 40× magnification, for *Ascaridia* eggs. The observed eggs in both chambers were counted. The eggs per gram (EPG) of faeces were determined using the following formula (Taylor *et al*., 2007).

EPG=Number of eggs counted in both chambers ' dilution factor volume of faecal suspension counted (mL). The multiplication factor was 50 or 100, depending on the dilution and chamber volume. EPG values were used to determine infection intensity: low (< 200 EPG), moderate (200–500 EPG), or high (> 500 EPG) (Sharma *et al*., 2019).

Control of nematode in domestic chickens

Mebendazole and its derivative have been chosen due to their safety, antiphrastic effect, long-lasting gut effect, and microtubule inhibition, using their derivative to investigate new uses.

Post-mortem examination and worm collection

Randomly selected three chickens from each replica were humanely sacrificed in accordance with a halal Muslim ritual, which involves severing the carotid arteries. The abdominal cavity was then opened, and the contents were removed. The small intestine was carefully excised, opened along its length (longitudinally), and inspected for any visible gross signs of lesions, such as red or brown circumscribed patches. Any observable worms were gently picked up with a camel hair brush and placed in Petri dishes filled with normal saline (Fig. 1B). The worms were then identified using standard nematode morphological keys.

Assessment of Histopathological Changes

Following dissection, suspected intestinal parts were promptly cut into pieces and preserved in Carnoy's solution. Washed with normal saline. The samples were dehydrated with a graded series of alcohol. Cleaned and embedded in paraffin wax for making a block. Hematoxylin and eosin (H&E) stain were used to stain the 5 µm thick section for optimum resolution. The prepared slide was examined under a light microscope (Olympus- DP71) with magnifications of 10x and 40x blindly (Pehlivanoğlu *et al*., 2016).

Determination of anthelmintic efficacy

Forty-five domestic chickens, 30 weeks old and naturally infected, were purchased, tagged, and kept apart. Chickens were divided into three groups (A, B, and C) with three replicates of five chickens each, based on their eggs per gram (EPG). The control group (untreated) was designated as Group A. Group B (treated) was given mebendazole, and Group C was given the derivative compound (E) at a dose of 15 mg per 1.5 kg body weight orally for three days. Clean water and normal feed were provided ad labatium throughout the experiment.

Drug's efficacy

On 7, 14 and 21 days' post-treatment, faecal samples were collected to perform an egg count reduction analysis. The efficacy of the drugs was established by obtaining the percentage change in the mean eggs per gram (EPG). The counts of eggs per gram (EPG) were counted at the beginning and the end of the treatment period. Efficacy was calculated by formula.

$$Reduction = \frac{pre\ treatment\ EPG - post\ treatment\ EPG}{pre\ treatment\ EPG} \times 100$$

Data analysis

The data were analysed using R statistcal softwere (version 4.5.2. 2025) to associate the presence of different variables with the prevalence of *A. galli*). One-way ANOVA was followed by post hoc test (Tukey) to evaluate the Anthelmintic efficacy at significance level $p < 0.05$.

RESULT

Prevalence and morphological features

Eggs of *A. galli* were detected in 72% of the examined chickens, with 330 of 456 backyard chickens infected (Figure 1A). Adult worms were yellowish-white, cylindrical, and sexually dimorphic: female measured 65–115 mm, male 45–81 mm. The anterior end bore three prominent tri-lobed lips, and the cuticle showed transverse striations with underdeveloped alae. Male had a blunt, curved tail, while female possessed a blunt, straight tail (Figure 1B). Eggs were oval, thick-shelled, and smooth, measuring approximately 80 × 50 µm (Figure 1C). Larvae are shown in Figure 1D.

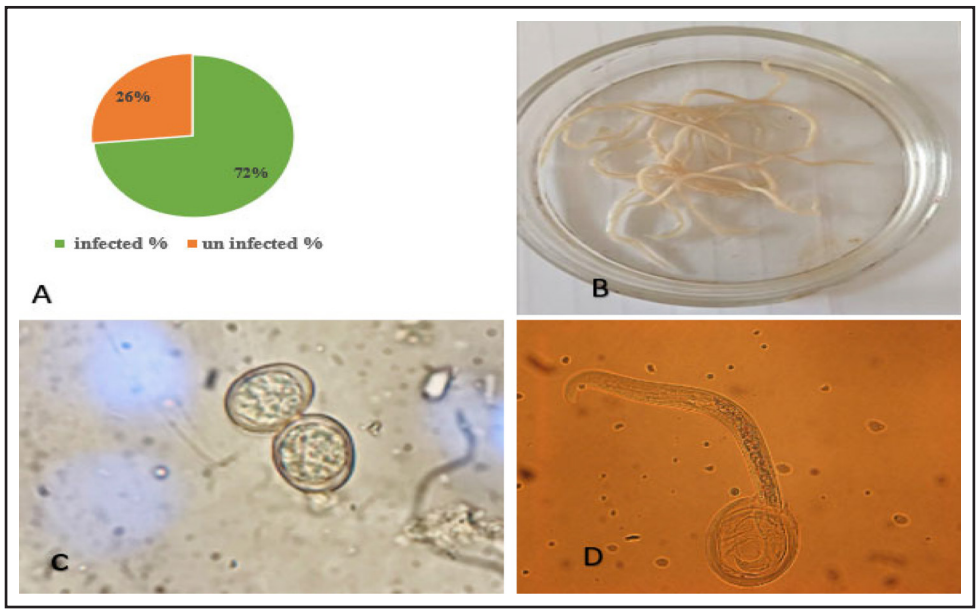

Figure 2. Prevalence Rate and Morphology of *A. galli*. (A) Overall prevalence of *A. galli*, (B) Adult *A. galli* (Whole Mount View), (C) Egg of *A. galli*, (D) Larvae of *Ascaridia*.

Factors influencing prevalence

Of 456 chickens examined, prevalence did not differ significantly by sex ($p > 0.05$), though females (74%, 200/267) were slightly more infected than males (68%, 130/189) (Figure 2A). Infection was significantly higher in adults (64%, 180/280) than in growers (55%, 150/270) ($P < 0.05$) (Figure 3B). By body condition, weak chickens showed much higher prevalence (96%, 150/156) compared to healthy ones (60%, 180/300) ($P < 0.05$) (Figure 3C). The highest prevalence in Swat (85.5%), followed by Lower Dir (72.3%) and Malakand (59.2%) ($P < 0.05$) (Figure 3D).

Management practice also played a role in infection free range domestic chickens were more infected (63%) than semi–free-range (37%) (Figure 4A). The prevalence was higher in scavenging chickens (75%), compared to supplemented ones (53%), ($P < 0.05$) (Figure 4B).

Non-dewormed chickens had a dramatically higher prevalence (92%) than dewormed ones (20%) ($P < 0.05$) (Figure 4C). Seasonal variation was evident: rainy season prevalence reached 86% versus 44% in the dry season ($p < 0.05$) (Figure 4D).

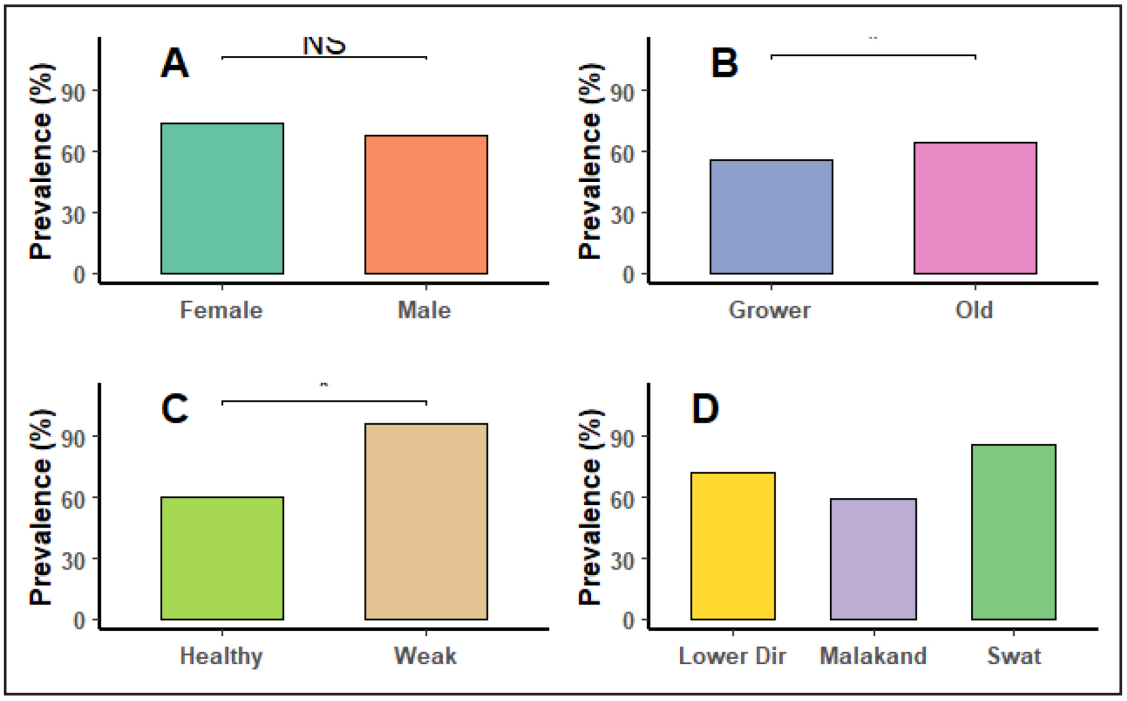

Figure 3. Associated Risk Factors Influencing *Ascaridia* Infection Prevalence. (A) Gender-wise prevalence, (B) Age-wise prevalence, (C) Health-wise prevalence, (D) Locality-wise prevalence.

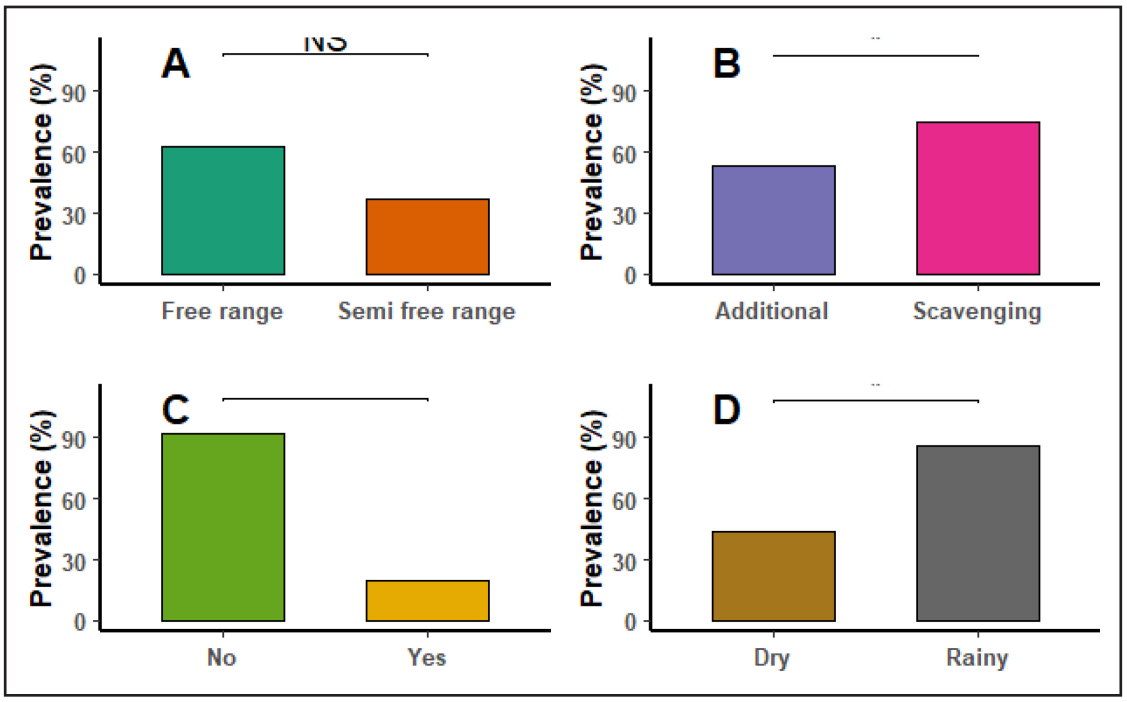

Figure 4. Management practices associated factors. (A) Rearing type, (B) Feeding type, (C) Deworming, (D) weather-based prevalence.

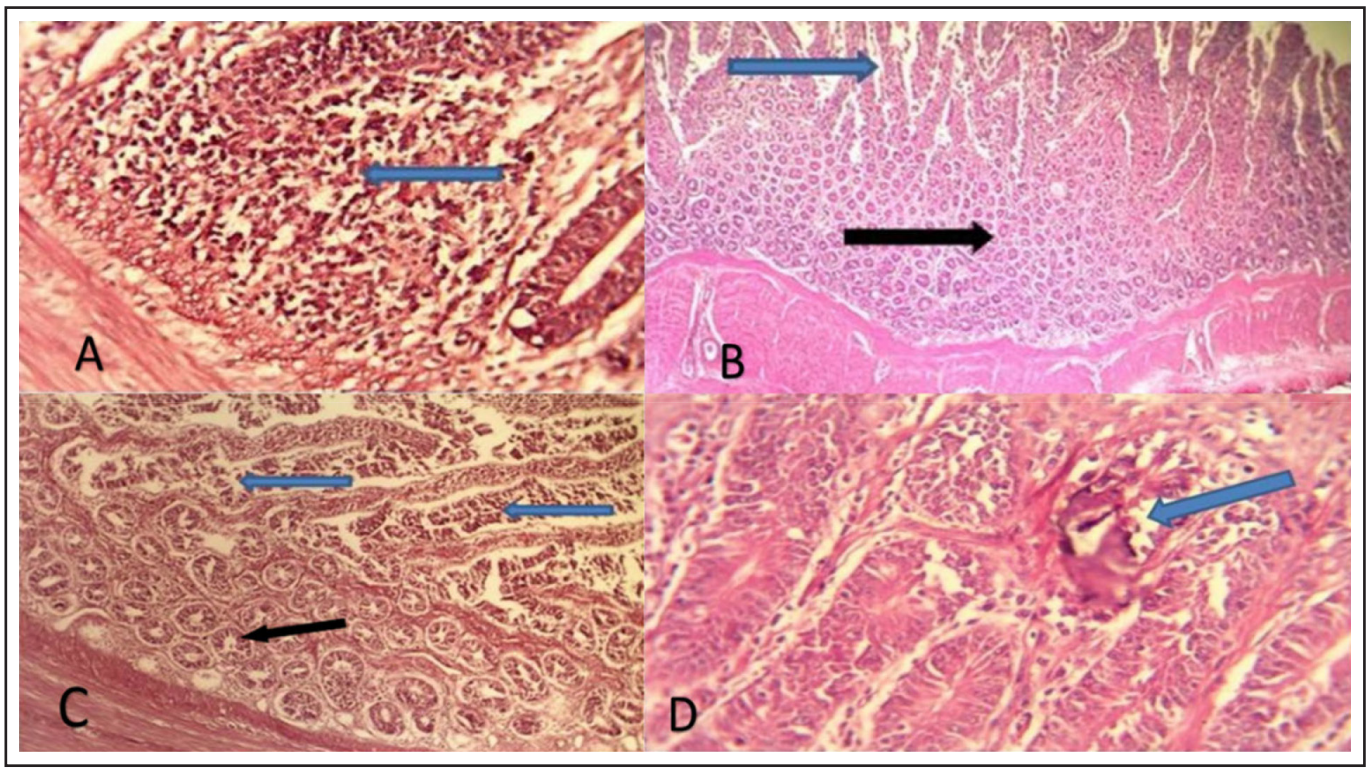

Figure 5. Histopathological changes induced by *Ascaridia*. (A) Mononuclear infiltration of the submucosa, (B) Glandular hyperplasia and atrophic microvilli, (C) villus necrosis with hyperplasia of the crypts, (D) Muscle dystrophic calcification.

Table 1. Eggs per gram (EPG) counts of 60 in the chickens Malakand region

Group	Drug Used	Egg per game		Mean % Reduction	P-value (95% CI)
		Before Treatment (M±SD)	After Treatment (M±SD)		
Control A	No treatment	390 ± 12	445 ± 11	–14.10	–
Group B	Mebendazole	385 ± 10	60.1 ± 7	84. 38	0.0526
Group C	Derivative Compound (E)	375 ± 08	45.6 ± 6	87. 84	

EPG= egg per gram. M±SD= Mean and standard deviation. CI = confidence interval.

Histopathological findings

Histopathological examination revealed marked intestinal changes. Submucosal oedema with mild cellular infiltration was observed, along with glandular hyperplasia (Figure 5A). Focal aggregates of inflammatory cells and necrotic debris were present in submucosal tissue. Submucosal glands exhibited proliferation, with partial villous atrophy (Figure 5B). Severe necrosis of villous epithelium, epithelial sloughing, and crypt hyperplasia were also noted (Figure 5C). Focal dystrophic calcification appeared as irregular basophilic masses in the muscular layers (Figure 5D).

Anthelmintic efficacy

The EPG values from faecal samples of both treatment groups are summarized in Table 1. Statistical analysis using a two-tailed test found no significant difference between Group B (Mebendazole) and Group C (Derivative Compound E), with a P-value of 0.0526 at a 95% confidence interval. Although the difference was not statistically significant, both treatment groups showed a progressive decrease in EPG levels after treatment.

No significant clinical side effects were observed in either group, except for minor effects associated with the use of Mebendazole.

Table 2. Egg-Negative Rates (%) After Treatment with Mebendazole and its derivative compound

Drugs	Positive Number	Negative Number	Negative rate (%)
Control (No treatment)	20	20	0
Mebendazole	20	14	70
Derivative compound (E)	20	16	80

The efficacy of the treatments against *A. galli* was calculated, showing reductions of 84.38% for Mebendazole and 87.84% for the Derivative Compound E, as presented in Table 1.

Among the 20 chickens treated with Mebendazole for *A. galli* infections, 14 tested egg-negative following treatment, which resulted in an egg-negative rate of 70% (14/20). Likewise, chickens treated with the Derivative Compound (E) also became egg-negative, with an egg-negative rate of 80.7% (16/20) (Table 2).

DISCUSSION

Ascaridiasis in domestic chickens in free range is very common. However, very few studies have explored its prevalence and its related pathology (Katoch *et al*., 2012; Alam *et al*., 2014). This current research concentrated on its prevalence, risk factor, control and dwelling of *Ascaridia galli* in the gut of chickens.

The 72% prevalence of *A. galli* observed in this study is high compared with several reports from Pakistan, but is in line with findings from backyard systems in other regions. The former is consistent with the findings of Ara *et al*. (2021) in Kashmir, India and Idika *et al*. (2016) in Nigeria, who reported high rates of infection in the chickens of the study area.

But our result is higher than reported result of Saemi Soudkolaei *et al*. (2021), and Afolabi *et al*. (2016) in Akure, Nigeria who found prevalence rates of 60.64, 63 and 64.6, respectively. these disparities are due the regional and climatic difference.

Khan *et al*. (2025) found a prevalence rate of 70%. The variation may be due to differences in the management system of the chickens. In the present study, *A. galli* infection was slightly higher in female chickens (74%) than in male (68%). This pattern is consistent with the observations of Saemi Soudkolaei *et al*. (2021), who suggested that the greater susceptibility to infection of females may be associated with their less discriminating and voracious feeding behaviour especially in egg laying hen. This aligns with the report of Sarba *et al*. (2019) and Refisa and Rebuma (2024), who suggest the high prevalence rate of infection in females was due to voracious feeding behaviour at the egg-laying stage. Adult chickens exhibit a higher prevalence rate of *ascaridiasis* as compared to younger chickens. This aligns with the findings of Tay *et al*. (2019) and Thapa *et al*. (2015), who reported a significant prevalence of *ascaridia* infection in adults. Similarly, Singh *et al*. (2021) found a high prevalence of *Ascaridiasis* in adult chickens due to prolonged exposure and continuous feeding in garbage. Additionally, Shifaw *et al*. (2021), Sherwin *et al*. (2013), and Thapa *et al*. (2015) reported a key role of contaminated feeding in the transmission of parasites. This aligns with Tarbiat *et al*. (2020), who reported a significant prevalence of *ascaridia* infection in backyard hens and associated a high parasite load with poor health conditions. Additionally, Katoch *et al*. (2012) found that chickens with poor body condition were more prone to *ascaridia* infection due to weak immunity and lost weight. This aligns with the result of Wondimu *et al*. (2019), who found that *ascaridiasis* was more prevalent in weak-bodied chickens and associated it with weakened immunity. Prevalence rates of *ascaridia* infection were varied by locality; district Swat had the highest prevalence rate (85.5%), followed by district Lower Dir (72.3%) and district Malakand (59.21%). These differences highlight the ecological effects on the transmission of parasites. This corresponds to the results of Abebe *et al*. (2025), Ilyes *et al*. (2013), and Jaiswal *et al*. (2020), all of whom found regional differences in the prevalence of *A. galli*, and the role of ecological factors. Based on management, the *ascaridiasis* was higher in free-range chickens as compared to confined chickens, which is aligned with the study of Tsegaye and Miretie (2021), who also reported a higher prevalence rate of *ascaridiasis* in free-range chickens (47.9%) compared to confined management. These findings imply that the continuous exposure of the chickens to infected soil with faeces through free-range rearing systems increases the risk of parasites. This shows the need to establish specific parasite management systems in outdoor production systems. Moreover, scavenging chickens had much higher rate of infection of 75% as compared to 53% in those on supplemental feed services, which highlights the critical role of feeding practice in parasitic infection. This is consistent with the work of Leung and Koprivnikar (2016) who reported that scavenging behaviour enhances the risks of parasitic infection in chickens. This is linked with ineffective management and contamination by the caretaker. Likewise, Ara *et al*. (2021) also found significant association between high infection and scavenging practices, indicating that increased exposure to contaminated soil with infected faeces is significantly correlated with high infection.

These findings highlight that scavenging behaviour offers reduced cost of nutrition and economic benefits, substantially increasing the chances of parasite transmission risks. The high prevalence of *A. galli* in non-dewormed chickens (92%) compared to dewormed chickens (20%) ($p < 0.05$) clearly demonstrates the effectiveness of proper deworming for reducing parasitic infection. This result aligns with Velkers *et al*. (2017), who reported the complete eradication of worms in treated chickens, as compared to untreated chickens. Similarly, Leung and Koprivnikar (2016) identified the absence of deworming practices as a key factor for parasitic infection in domestic chickens. This aligns with the research of Thapa *et al*. (2015) from Europe and Subedi *et al*. (2018) from Nepal, who reported a significant increase in *ascaridiasis* in chickens caused by the absence of scheduled deworming. The researcher highlighted scheduled deworming in backyard chickens for the control of *Ascaridiasis*. The prevalence of *ascaridiasis* was significantly higher during the rainy or wet season (86%) than the dry season (44%), which proved that humidity and high temperature promote hatching, growth and transmission. This result aligns with that of Tsegaye *et al*. (2024), who found that *Ascaridia* eggs cannot persist in dry conditions. Furthermore, Thomas *et al*. (2024) and Anggrahini *et al*. (2025) documented a significant increase in infections among domestic chickens during the rainy or wet season, compared to the dry season. The warm and wet season was more suitable for the parasite egg development and infection transmission. This underscores the urgent necessity for the season-specific control of *A. galli*, particularly in the hot and humid season (Asumang *et al*., 2019). The histopathological study of the small intestine revealed significant tissue damage, with petechial haemorrhages and mucosal thickening. Our result aligns with the study of Shifaw *et al*. (2021) and Tsegaye and Miretie (2021), who also reported that the pathological alteration induced by *Ascaridia* leads to decreased feed intake, impaired growth, and mortality. This is further supported by the report of Wuthijaree *et al*. (2019), who highlighted the adverse effects of *Ascaridiasis* on chickens health. The mebendazole and its derivative significantly reduced the egg per gram in both groups. Notably, the derivative was more effective than mebendazole. Mebendazole and its derivative have very slow solubility in water, but maintain the bioavailability and efficacy for a long time. It interrupts the microtubule of nematode, blocks the intake of glucose, causes paralysis and finally death of the parasite (Tarbiat *et al*., 2016). In our study, mebendazole and its derivative show a marked decrease in egg per gram (EPG) on day 14, and a significant reduction is observed on day 21. This aligns with the outcome of Permin (2021), who reported an over (83%) reduction in egg per gram (EPG) after treatment of chickens with anthelmintics. Similarly, Nithiuthai *et al*. (2003) observe the 77% egg per gram reduction in chickens after orally administering mebendazole 22 mg/kg consecutively for six days. Further, Shah *et al*. (2015) documented that benzimidazole and fenbendazole, a group of anthelmintics, achieved an over 90% efficacy in reducing egg per gram (EPG) in infected chickens. These anthelmintics demonstrated a favourable pharmaceutical profile. Drug resistance in poultry nematode is increasing and is associated with excessive and irregular use of anthelmintics for the control of parasites in developing regions (Mitra *et al*., 2023). This raises concerns about the effectiveness of anthelmintics. Ritu *et al*. (2023) reported anthelmintic resistance (AhR) in *A. galli* affecting backyard chickens in Bangladesh. *Ascaridia* species frequently coexist with other gastrointestinal nematode parasites. Improper, irregular and inadequate use of anthelmintics can create resistance in the *ascaridia* species, which is unavoidable (Ritu *et al*., 2023). In order to diminish the development of resistance in parasites and increase long-term effectiveness, these findings

emphasize the critical need for integrated control strategies that include regular diagnostics, targeted treatments, anthelmintic rotation, and improved management.

CONCLUSION

In this study, the prevalence of *A. galli* was high in free-range poultry, and this research indicated its effects in low-input systems. Host factors, season, management and locality affected the risk of infection. The intestinal damage caused by heavy loads of parasites in chickens reduces growth and causes death. Both the Mebendazole and its derivative were effective in reducing the parasite burden and egg counts, with the derivative having slightly higher efficacy. Nonetheless, irregular and overuse of anthelmintics create risk of resistance. Control of *A. galli* infection in backyard chickens needs improvement of feed, improved hygiene, proper biosecurity, seasonal management and rotational use of anthelmintic. In conclusion *A. galli* infection can cause a serious hazard to domestic poultry. Combined parasite control is necessary to reduce the rates of infection, slow down the development of drug resistance and limit economic losses.

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Conflicting of Interests

There is no conflict of interest to declare.

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