
PREVALENCE OF HELMINTH PARASITES OF SWINE IN FOUR SELECTED COMMUNITIES IN GARKAWA DISTRICT, MIKANG LOCAL GOVERNMENT AREA, PLATEAU STATE, NIGERIA

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ABSTRACT

An assessment of helminth parasitic infections of swine in selected communities of Wai, Talim, Killa and Pituop in Garkawa District Mikang LGA, Plateau State, Nigeria was undertaken and aimed to isolate, identify parasite types and to determine its prevalence and management systems. A total of 80 faecal samples were collected in October 2023, from pigs with 20 samples from each of the communities. Samples were immediately sent to the parasitology Department of National Veterinary Research Institute, Vom for laboratory screening using floatation and sedimentation techniques for isolation of helminth parasites. The result showed an overall prevalence of 75.0% in the females and 69.4% in the males. There was no significant difference ($P > 0.05$) in helminths infection by sex. Infection by reproductive status shows that the pregnant pigs are more susceptible 80.0% compared to the non-pregnant 72.0%. Helminths infestation by management systems, shows that those under intensive system had less infections 66.7% compared to those on semi-intensive 73.2%. Helminths infection differs significantly ($P < 0.05$) according to parasite type. Helminth parasites identified included *Strongyloides*, *Oesophagostomum* spp, *Nectator* spp, *Hyostrongylus* spp, *Trichuris* spp and *Eimeria* spp. The intensive system combined with use of suitable Anthelmintic and anti coccidial preparation is suggested.

Keywords: Assessment, Helminth, Parasites, Prevalence, Garkawa District.

INTRODUCTION

Pigs are among the most important domestic animals in this country (Ojo *et al.*, 2022). Not only because farmers find them very easy to care of but also for their economic values capable of generating daily income for farmers (Abiodun *et al.*, 2017). Pigs are also described as multipurpose animals providing about 40% of meat in the world market and very important for agro-based industries providing feed mills, provision of bone and blood meal (Dastu *et al.*, 2023). Unfortunately, pig production is being threatened by gastro-intestinal parasite (Tumusime *et al.*, 2020). Tumusime *et al.* (2020) reported that pigs raised in open houses and malnourished one are prone to helminth infection. Dey *et al.* (2008) reported that pigs reared under intensive systems are less prone to helminth infection compared to those raised traditionally without medical intervention. Geresu *et al.* (2015), Roeset, *et al.*, (2017) reported that age, sex, husbandry system and geographical location are risk factors in helminth infection. Sowemino, *et al.* (2020) reported a high prevalence of helminths infection in the young (37.2%) than the adult (35.7%). Ojo *et al.* (2022) reported a prevalence of 70.1% in a single infection in pigs. Gael *et al.* (2019) reported that hormonal changes at late pregnancy tend to lower the resistance of the female pigs to helminth infection. Sowemino *et al.* (2020) conducted a research on pigs in Ibadan and found out that pigs were infected with five types of helminths, which included *Trichuris suis*, *Ascaris suum*, *stephanurus dentatus*, and *isospora suis*. This study was aimed at the isolation, identification of parasite type, management systems and determination of the prevalence of helminths in the study area.

Material and Methods

Study area: The research was carried out in four selected communities namely (Wai, Talim, Killa, and Pituop) in Garkawa District, Mikang L.G.A of Plateau State. Mikang L.G.A which is located on latitude 9° N and longitude 9.6°E within the North Guinea savannah in North Central Nigeria. It has an elevation of 278metres (912 feet) with an average temperature of 26°C. Mikang witness two

distinct seasons with precipitation of 14.50 mm per annum. They usually experience their rain between late May and October (Manpower Nigeria, 2021).

Age determination of Animals: Ageing of animals was done using available record of date of birth obtained from farm records and according to Amudayi (2019).

Pregnancy Diagnosis: Pregnancy diagnosis was done using history and physical examination detecting for the presence or absence of enlarge uterus, breast changes or softening and enlargement of cervix using the Hagar sign, gateway (2015).

Sample Collection

A total of 80 faecal samples were collected in October 2023 from pigs in the selected communities (Wai, Talim, Killa and pituop) in Garkawa District. 20 pigs were sampled from each of the selected location. The animals were first restrained, age, sex, reproductive status and type of management system was determined. With the aid of a sterile polythene sheet, two fingers were carefully inserted in to the rectum and the faeces scooped out, tied labelled using markers and adhesive tape according to sex, age, reproductive status, management system and location and kept in a plastic flask containing ice pack and taken to parasitology Department of National Veterinary Research Institute, Vom for screening.

Sample Processing

Direct microscopic examination and sodium chloride floatation and sedimentation techniques were used to process the faecal samples as described by (Adejinmi, 1994, I.L.R.A.D, 2015). Based on their morphology and size as described by (Soulsby, 1982, I.L.R.A.D; 1994 and Adejinmi, *et al*, 2005). The results from faecal sample screening was subjected to statistical analysis using Chi-square analysis while simple percentages were used to determine the prevalence rate of the helminth parasites.

Results

Table 1: Prevalence of Helminths In Pigs In Wai Community

Variables	No. Examined	No. Positive	Prevalence %	Odd Ratio	Chi Square Value	P-Value
Sex						
Female	13	10	76.9	0.556	0.220	0.639
Male	7	6	85.7			
Age						
Adult	9	9	100.0	1.571	4.091	0.043
Young	11	7	63.6			
Reproductive Status						
Not pregnant	18	14	75.8	0.778	0.556	0.456
Pregnant	2	2	100.0			
Management System						
Intensive	2	1	50.0	0.200	1.250	0.264
Semi-intensive	18	15	83.3			

Table 2: Prevalence of helminths in Wai community based on parasite type

Parasite type	No. present	Percentages	Chi square	P-value
<i>Strongylosides</i>	2	10.0	12.400	0.006
<i>Oesophagostomum Spp</i>	11	55.0		
<i>Necator Spp</i>	-	-		
<i>Hyostrogylus Spp</i>	-	-		
<i>Trichuris Tricharis</i>	1	5.0		
<i>Eimeria Spp</i>	6	30.0		
Total	20	100		

Table 3: Prevalence of Helminths in Pigs in Talim Community

Variables	No. Examined	No. Positive	Prevalence %	Odd ratio	Chi square value	P-value
Sex						
Female	12	7	58.3	0.467	0.586	0.444
Male	8	6	75.0			
Age						
Adult	6	4	66.7	1.111	0.010	0.919
Young	14	9	64.3			
Reproductive Status						
Not pregnant	20	13	65.0	-	-	-
Pregnant	-	-				
Management System						
Intensive	2	2	100.0	1.636	1/197	0.274
Semi-intensive	18	11	61.1			

Table 4: Prevalence of helminths in Talim community based on parasite type

Parasite type	No. present	Percentages	Chi square	P-value
<i>Strongylosides</i>	-	-	1.368	0.504
<i>Oesophagostomum Spp</i>	7	36.8		
<i>Necator Spp</i>	-	-		
<i>Hyostrogylus Spp</i>	8	42.1		
<i>Trichuris Tricharis</i>	-	-		
<i>Eimeria Spp</i>	4	21.1		
Total	19	100.0		

Table 5: Prevalence of Helminthis in Pigs Killa Community

Variables	No. Examined	No. Positive	Prevalence %	Odd ratio	Chi square value	P-value
Sex						
Female	10	9	90.0	3.857	1.250	0.264
Male	10	7	70.0			
Age						
Adult	4	3	75.0	0.692	0.078	0.760
Young	16	13	81.3			
Reproductive Status						
Not pregnant	17	14	82.4	2.333	0.392	0.531
Pregnant	3	2	66.7			
Management System						
Intensive	4	3	75.0	0.692	0.078	0.780
Semi-intensive	16	13	81.3			

Table 6: Prevalence of Helminths in Killa community based on parasite type

Parasite type	No. present	Percentages	Chi square	P-value
<i>Strongylosides</i>	1	3.4	8.379	0.039
<i>OesophagostomumSpp</i>	7	24.1		
<i>NecatorSpp</i>	-	-		
<i>HyostrogylusSpp</i>	11	37.9		
<i>Trichuris Tricharis</i>	-	-		
<i>Eimeria Spp</i>	10	34.5		
Total	29	100.0		

Table 7: Prevalence of Helminths in Pigs in Pituop Community

Variables	No. Examined	No. Positive	Prevalence %	Odd ratio	Chi square value	P-value
Sex						
Female	9	7	77.8	2.917	1.174	0.279
Male	11	6	54.5			
Age						
Adult	10	5	50.0	0.250	1.978	0.160
Young	10	8	80.0			
Reproductive Status						
Not pregnant	20	13	65.0	-	-	-
Pregnant	-	-	-			
Management System						
Intensive	1	0	0.0	3.167	1.955	0.162
Semi-intensive	19	13	68.4			

Table 8: Prevalence of helminths in Pituop community based on parasite type

Parasite type	No. present	Percentages	Chi square	P-value
<i>Strongylosides</i>	8	33.3	8.917	0.063
<i>Oesophagustomum Spp</i>	8	33.3		
<i>NecatorSpp</i>	2	8.3		
<i>Hyostrongylus Spp</i>	1	4.2		
<i>Trichuris Tricharis</i>	-	-		
<i>Eimeria Spp</i>	5	20.8		
Total	24	100.0		

Table 9: Overall Prevalence of Helminth parasites in Pigs in Garkawa District

Variables	No. Examined	No. Positive	Prevalence %	Odd ratio	Chi square value	P-value
Sex						
Female	44	33	75.0	1.321	0.307	0.586
Male	36	25	69.4			
Age						
Adult	29	21	72.4	0.993	0.000	0.990
Young	51	37	72.5			
Reproductive Status						
Not pregnant	75	54	72.0	0.088	0.150	0.898
Pregnant	5	4	80.0			
Management System						
Intensive	9	6	66.7	0.731	0.173	0.667
Semi-intensive	71	52	73.2			

Table 10: Overall Prevalence of helminths in Garkawa community based on parasite type

Parasite type	No. present	Percentages	Chi square	P-value
<i>Strongylosides</i>	11	11.8	55.839	0.000
<i>OesophagustomumSpp</i>	34	36.6		
<i>NecatorSpp</i>	2	2.2		
<i>HyostrongylusSpp</i>	20	21.5		
<i>Trichuris Tricharis</i>	1	1.1		
<i>Eimeria Spp</i>	25	26.9		
Total	93	100.0		

The result on the prevalence of helminth parasitic infection of swine in selected communities in Garkawa District Mikang L.G.A, Plateau state Table1, revealed that, of the 80 samples collected and examined Wai had a helminth prevalence 76.9% in the females while the males had 75.0%. Table 3 shows that in Talim, the females had 58.3% while the males 75.0% prevalence. Table 5 shows that female pigs in Killa community had 90.0% while male had 70.0%. Table7, in Pituop community the female pigs had 77.8% while the male pigs 54.5% prevalence. There was no significant difference ($P>0.05$) in helminth infection according to sex. The distribution of helminth in Wai community by age indicated that the adult pigs had a prevalence of 100.0% while the young 63.6%.

Discussion

In this study, it is evident that helminths parasite infection is high in pigs in the communities selected for findings. The study shows an overall prevalence of 75.0% in the female while the males pigs had 69.4% which is higher than the figure (70.1%) reported by Ojo, *et al.* (2022). Helminth infection by age shows that the adult had the highest helminth infection, with prevalence (100%) than the young (63.6%) indicating that there was significant difference ($P < 0.05$) in helminths infection by age, this does not agree with the finding of Sowemino, *et al.* (2012) who reported a high prevalence in the young (37.2%) then adult (35.7%). Table 9. On reproductive status bases, the non pregnant animal had 72.0%, this agrees with the findings of Gael, *et al.* (2019) who opined that hormonal changes at late pregnancy lowers the resistances of female pigs to helminth infection. Table 9. On management system bases, the pigs reared intensively had less helminth prevalence 66.7% while those on semi-intensive had the highest burden of helminth infection 73.2% this agree with the findings of (Geresu, *et al.* (2015) who incriminated husbandry system as one of the risk factors for helminths infection. The study concluded that the most frequently occurring helminth parasites in the communities include: *strongyloides* 11.8%, *oesophagostomum spp* 36.6%, *Necator spp* 2.2%, *Hyostromgyilus spp* 21.5%, *Trichuris spp* 1.1%, *Eimeria* 26.9%

CONCLUSION AND RECOMMENDATION

The study concluded that swine in the selected communities in Garkawa District of Mikang L.G.A Plateau State suffers some level of helminth parasites infection and the parasites identified were *strongyloides Oesophagostomum*, *Necator spp*, *Hyostromgyilus spp*, *Trichusris Trichuris spp* and *Eimeria spp*. Husbandry was identified as one of the risk factor responsible for helminths infection in the communities. Intensive system of rearing combined with timely treatment with suitable anthelmintics and Anticoccidia is suggested.

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