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Prevalence of Gastrointestinal Parasite in Free Ranged Managed Pigs in Aba, Abia State, Nigeria

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Abstract
Extensively managed pigs have been identified as reservoirs and transmitters of gastrointestinal parasites. The purpose of this study was to investigate the prevalence of gastrointestinal parasites in indigenous pigs in Aba, Abia State. Faecal samples were collected from one hundred and seventy-six (176) pigs of different sexes but with the same age range during the study. The samples were investigated for the presence of different gastrointestinal parasites using the direct wet mount, concentration and sedimentation techniques. The result showed that the percentage value of infection was high at 99.99% and the sow (female) had a higher parasite count of 90(64.28%) than the boar (male) at 50(35.71%). The study also revealed that *Ascaris suum* was predominantly seen in the area sampled at 62(44.28%). Precautions on handling internal organs and carcasses of pigs should be taken seriously in other to prevent transmission of the parasite.
Keywords: Faecal samples, Gastrointestinal parasite, Prevalence rate, Ascaris suum and Schistosoma suis

Introduction

Gastrointestinal parasite infection is common among farm animals especially those kept and reared under free-ranged systems (Intervet, 2011). Pigs raised in extensive piggery systems are prone to gastrointestinal infections due to their scavenging habit (Holness, 1991), through the process of ingesting food scraps and waste disposed in the environment. The roaming habits of these free-ranged pigs favour the ingestion of intestinal parasite eggs making these indigenous pig breeds particularly susceptible to infection with intestinal parasites (Roepstorff and Nansen, 1994). Gastrointestinal parasite like nematodes limits pig production and this parasite causes illness which might lead to death (Pattison *et al*., 1980). The consequences of the diseases can be enormous due to the insufficient treatment or medication of the animal (Olomu and Oboh, 1995). Pig production and development are not only affected by endoparasites but it is also affected by ectoparasites such as lice, ticks and fleas which reduces its production (Kahn, 2006), also the climatic condition of the tropics and the absence of inspection and routine treatment of local pigs against parasitic infections increase the number of pigs with a high parasitic load of the gastrointestinal parasite (Holness, 1991). These pigs usually serve as intermediate hosts when infected and they can pose a high risk to humans within their environments at their roaming nature. Therefore, the need to study the prevalence of gastrointestinal parasites in free-range pigs is important.

Materials and Methods

Study area

Aba is a city in Abia State. It has two local government areas, Aba North and Aba South. The Aba North comprises the international market which is situated at Ariaria where the study was carried out, having a longitude of $5^{0}20^{'}$N and a latitude of $7^{0}19^{'}$E and an average temperature of 32 ^{0}C (Okoro, 2000)

Faecal sample collection

One hundred and seventy-six faecal samples were collected from different sampling areas using sterile specimen bottles and taken to the National Research Veterinary Institute outstation umudike for examinations. The faecal examination was done using direct wet mount, sedimentation concentration and floating techniques with sodium chloride solution.

Examination of faecal sample using wet preparation

This was done using a glass slide and one or two drops of normal saline were drooped on the slide using a pipette and a glass rod was used to collect the sample which was added to normal saline and emulsified. The smear was covered with a cover slip and examined under x10 and x40 objective lens for the presence of gastrointestinal parasites as described by Taylor 1999.

Examination of faecal sample using floatation method

This method was carried out as described by Urqhart *et*

al. (1996), Portions of the stool of 2 g were placed in a penicillin bottle and quarter fill with Willis solutions. Using an applicator crush the portion of the stool and mix well with solution, and then fill the bottle to the top with willis solution. Place a cover slip carefully at the tip of the bottle and leave for 10 minutes, then remove the coverslip and examine it under the microscope using x10 and x40 of the objective lens.

Examination of faecal sample using concentration method

2 g of stool was mixed on 10 ml of saline before being filtered through two layers of strain and centrifuged for 1 minute at 500 x g and then decanted. Ten millilitres of water was added to the deposit and agitated for 5 minutes. The mixture was later added 3 ml of ethyl ether and shacked vigorously for 30 seconds before centrifuging for 1 minute at 100 x g forming four different layers (layer ethyl ether, debris, formal water, and deposit containing the egg and cyst of parasite). Drops of the deposit were placed on a glass slide and two drops of iodine solution were added before being examined on a microscope with x10 and x40 objective lens (Permin *et al*., 1999)

Parasite identification

All gastrointestinal parasite eggs and forms isolated using a combination of techniques(wet, floatation and concentration methods) were identified in the National Veterinary Research Institute outstation Umudike, Abia State, and a combination of keys and descriptive plates and diagrams from various texts were also used to identify and detect parasite as described by Taylor, 1999.

Data analyses

Data was analysed using descriptive statistics such as mean and percentages and was represented using tables

Results and Discussion

The results of the study on the prevalence of gastrointestinal parasites in extensively managed pigs in Aba, Abia State provide valuable insights into the health status of the pig population. The analysis of 176 faecal samples revealed a notable presence of gastrointestinal parasites, with a higher prevalence rate observed in female pigs compared to male pigs. This disparity in infection rates between sexes, with 64.28% of females and 35.71% of males infected, underscores the importance of considering gender variations in parasite susceptibility. Among the gastrointestinal parasites identified, Ascaris suum emerged as the most prevalent, affecting 44.28% of the sampled pigs. This finding is consistent with previous studies by Ajayi *et al*. (1988) and Mafuru *et al*. (2008), highlighting the persistent prevalence of Ascaris suum in pig populations. In contrast, Schistosoma suis exhibited the lowest prevalence at 3.57%, indicating a lower burden of this particular parasite in the study area. The high presence of helminth eggs in the faecal samples further emphasizes the need for improved parasite control measures in pig management practices. The study suggests that inadequate medication and suboptimal hygiene in feeding areas may contribute to the increased prevalence of gastrointestinal parasites among pigs. Addressing these factors through enhanced veterinary care and sanitation protocols could help mitigate the risk of parasite infections in pigs and reduce the potential transmission to humans. The findings of this study highlight the importance of regular monitoring and control of gastrointestinal parasites in pig populations, especially those managed extensively. By focusing on targeted interventions to reduce parasite burdens and improve overall health outcomes in pigs, stakeholders can safeguard animal welfare and minimize the public health risks associated with zoonotic infections. Further research and collaborative efforts are warranted to develop sustainable strategies for parasite management in pig farming practices.

Conclusion

His study on the prevalence of gastrointestinal parasites in extensively managed pigs in Aba, Abia State underscores the significant burden of parasitic infections in the pig population. The findings reveal a high prevalence of gastrointestinal parasites, with Ascaris suum being the most common parasite identified. The study highlights the gender-based differences in infection rates, with female pigs showing a higher susceptibility to gastrointestinal parasites compared to males. The presence of helminth eggs in faecal samples indicates the need for improved parasite control measures, including enhanced veterinary care and hygiene practices in pig management. Addressing these factors is crucial to reducing the risk of parasite transmission to humans and ensuring the overall health and well-being of pigs. Moving forward, proactive health monitoring and targeted interventions are essential to mitigate the impact of gastrointestinal parasites in extensively managed pig populations. By implementing effective parasite management strategies, stakeholders can promote animal health, enhance food safety, and minimize the public health implications of zoonotic infections. Continued research and collaborative efforts are vital to developing sustainable approaches for parasite control in pig farming practices and safeguarding both animal and human health.

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Table 1: The infection rate of parasites between sexes

Sex	Number examined	Number infected	Percentage infected (%)
Boar (Male)	76	50	35.71
Sow (Female)	100	90	64.28
Total	176	140	99.99

Table 2: Prevalence of parasites encountered during the during study

Parasite	Number infected	Percentage infected (%)
Bougelatia diducta	16	11.42
Fasciolopsis buski	10	7.14
Ascaris suum	62	44.28
Metastronglus apri	9	6.42
Globocephalus connorfilli	7	5.00
Trichuris trichura	18	12.85
Schistosoma suis	5	3.57
Ascarops strongylina	6	4.28
Hyostrongylus rubidus	7	5.00
Total	140	99.99