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Prevalence of Gastrointestinal Parasites in Pigs from Farms at River State University, Port Harcourt

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Abstract
Study on gastrointestinal parasite infections amongst pigs raised in farms of Rivers State University between March and August, 2023 was conducted. Stool samples of the pigs were collected and examined for parasitic infections. 40 pigs were sampled and in each of the pig, stool samples were taken. Samples were examined using direct smear method, Floatation method and Formol-ether Concentration method. A total of 36 stool samples were infected out of the 40 samples collected given an overall prevalence of 90%. The individual parasites observed were *Ascaris suum, Trichuris suis, Trichostrongyllus spp, Strongyloides ransomi and Oesophagostomum dentatum.* The most prevalent parasite observed during the study was *Ascaris suum*, which recorded 32 (80%), followed *Strongyloides ransomi* 30 (75%), *Oesophagostomum dentatum* 28 (70%), while *Trichuris suis* and *Trichostrongylus species* recorded 25 (60.3%) and 24 (60%) prevalence respectively. Sex related prevalence showed female was more parasitized than their male canter pat. However, there was no significant difference in comparing sex related infections. This study thus confirmed that pigs raised either intensively or extensively can be infected with gastrointestinal helminth parasites. And infection could be an indicator of poor feeding management, prevailing climatic condition within the study foci, poor hygiene management within the farm and poor sanitary management. Resulting effect can lead to poor health condition of the pigs or can also lead to economic loss as poor health can kill the animals. The farm managers should regularly deworm of their animals to combat infections with gastrointestinal parasites.

Keywords: Gastrointestinal, Parasites, Pigs, Infection, *Sis Scrofa,*

Introduction

Globally, the challenge of nation's fast growing human population in recent time has increased insufficiency for food, particularly in terms of high demand and high cost of meat protein. Food and Agricultural Organization (2008) reported that amongst human population, capita daily protein intake is below the recommended minimum of 65g per day. In view of this, Domestic Pig (*Sis scrofa*) is raised to meet the demand for meat protein and to potentially substitute for high demand of beef in the fast-growing human population (Augustina et al., 2017). Pig farming is an important means of economic growth for many countries that are dependent on agriculture, and are source of protein in many countries world-wide and it supplies a good percentage of daily meat protein. In Nigeria, pigs are raised only for pork production and to meet the demand for meat (Njoga et al., 2018). Pork accounts for nearly 30% of global meat consumption, and it is an indispensable component of many rural economy, and contributes greatly to job creation, poverty reduction and bridging the gap between demand and supply of animal protein for human consumption (Adedipe et al., 2014, Aiyedun & Oludairo, 2016). In Nigeria pig farming is most practiced extensively than intensively. In the extensive practice of raising pigs, the animals are allowed to roam freely outdoor, and this exposes them to some prevalent risk conditions to which they are compelled to. Nevertheless, Pig farming does not need much involvement in terms of labour and feeding cost, rather exposure to pollution and infective contamination, high morbidity and mortality rates and increased rate of zoonotic infection are major prevalent constraints that are associated with farming practice of raising pigs (Atawalna et al., 2016; Omoruyi & Agbinone, 2020). Despite the benefits associated with raising pigs, quiet number of factors still militates against the good purpose of pig farming, such as high cost of veterinary services, lack of credit facilities to farmers, poor technological and inadequate facilities and parasitic infections. However, gastrointestinal helminthes are known to associate majorly with pigs, and pig research has been proven to be an important epizootic reservoir of parasites that exposes other animals and human to health risk (Augustina et

al.,2017; Symeonidou et al., 2020). Helminthiasis constitutes a major impediment to efficient and profitable pig production world-wide (Atawalna et al. 2016). In both intensive and extensive farming, gastrointestinal parasites have been investigated to be prevalent in all production system (Eze et al., 2010; Agustina et al., 2017). However, gastrointestinal parasites observed in pigs pose severe threat to the life, health and productivity of pigs. These infections with gastrointestinal parasites are responsible for great economic loss to pig farmers, reduced productivity, poor growth rate, infertility, and reduction in the value of pork meat (Nanse & Roepstorff, 1999; Omoruyi & Agbinone, 2020). Hence this study seeks to determine prevalent of gastrointestinal parasite associated with pigs raised in the intensive method of farming.

Materials and Methods

The study was conducted in the farm of a government owned University, precisely in Rivers State University Port Harcourt in Rivers State of Nigeria. The area lies within the tropical rainforest zone characterized by heavy rainfall and is located between latitude 4^0 48'12.91 N and longitude 6^0 58'35.47 E. Technological system of the farm is adequate, with adequate water facilities. Sanitary condition of the environment is grossly adequate. The study was carried out within the month of March and August, 2023. Stool samples were collected from 40 (Forty) pigs within the farm in the Rivers State University Port Harcourt to be examined for presence of intestinal helminth parasites. The pigs are reared intensively, which is a system of farming were the pigs are kept in stalls that are partially covered and adequate care is provided for their survival. During sample collections, samples of stool where extracted manually from the pig per rectum into a sterile container, with a sterilized plastic gloves. Samples were properly labeled and transported to the parasitology laboratory of the Rivers State University, Port Harcourt for parasitological analysis. Three parasitological methods; Direct smear method, Floatation method and Formol-ether Concentration method was adopted for examination according to Cheesbrough (2015), to extract parasite stages from the stool samples collected from the pigs. About 1gram of stool sample was emulsified in about 4ml of 10% formal water measured in a test tube. 4ml of formal-ether water was again added to the solution and mixed properly by shaking. The mixture was filtered into a test tube using a cloth gauge and about 3-4ml of diethyl ether water was added and the mixture shaken vigorously and allowed to stand for 2 minutes. After then the mixture was centrifuged at 1,500rmp (Revolution per Minutes) for 3 minutes. Stool debris hanged on the side of the tube was loosened using a glass rod and tube inverted to pour off supernatants. The sediments were mixed thoroughly, and a drop from the sediment with a Pasteur pipette was applied on a microscopic slide and drop of Lugols' iodine was added to it and covered with a cover slip and viewed under a microscope using X10 objective and X40 objective.

Results

Composition of parasites from stool samples obtained from pigs raised from Rivers State University, Port Harcourt. A total of 40 pigs were sampled and their stools examined. Thirty-six (36) (90%) of the sampled pigs were positive for Five (5) gastrointestinal helminth parasites, while 4 (10%) of the sample examined were shown negative of the parasites (Table 1). From the stool samples examined, five species of helminth parasites were observed. These include *Ascaris species*, *Trichuris species*, *Oesophagostomun species*, *Trichostrongylus species* and *Strongyloides species.* From the study, high prevalence of parasites species were observed; *Ascaris suum* 32 (80%), followed by *Strongyloides ransoni* which recorded 30 (75%), *Oesophagostomum dentatu* recorded 28 (70%), *Trichuris suis* recorded 25 (60.3%), while the least prevalence of infection was observed in *Trichostrongylus species* 24 (60%) (Table 2). Gastrointestinal helminth parasites prevalence in relation to sex showed that out of the 40 pigs sampled, 18 were males while 22 were females. Of the total number of males sampled 16 (88.8%) were positive of the infection with gastrointestinal parasites while 20 (20.9%) were positive for the five species of parasites observed (Table 3).

Table 1: Overall prevalence of parasites in the study area

Samples examined	No. positive (%)	No. negative (%)
40	36 (90%)	4 (10%)

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Table 2: Gastrointestinal parasites observed from the stool samples

Parasites species	No. of samples Examined	No. of samples Positive (%)	No. of samples Negative (%)
Ascaris suum	40	32 (80%)	8 (20%)
Trichuris suis	40	25(60.3%)	15(39.7%)
Oesophagostomum dentatum	40	28 (70%)	12 (30%)
Trichostrongylus species	40	24 (60%)	16 (40%)
Strongyloides ransomi	40	30 (75%)	10 (25.0%)

Table 3: Prevalence of Parasites in Relation to Sex

Sex of Pigs	No. examined	No. positive	No. negative
Male	18 (45.0%)	16 (88.8%)	2 (11.2%)
Female	22 (55.0%)	20 (90.9%)	5(9.1%)
Total	40	36 (90.0%)	4(10%)

Discussion

It is obvious from this study that gastrointestinal helminth parasites are prevalent in pigs, and can constitute a health challenge amongst other animals raised within the farms. Humans are also at risk of the zoonotic infections. Farmers in course of raising pigs for the purpose of generating income and also to meet population demand for meat protein, experience both direct and indirect economic losses because of helminthiasis. The recorded percentage prevalence of 90% is an indication of high contamination and poor hygiene practices within the farm. Thus, this finding of higher prevalence of infections corroborates findings of other studies in Oyo State and Anambra State of Nigeria (FAO, 2008). According to Sowemimo et al. (2012) and Dey et al. (2014), prevalence of infections in pigs can vary due to poor feeding management and prevalent climatic conditions within the geographical area where the pig's farm is situated. Prevalence of infection in pigs reared under intensive system of farming could be as a result of poor management practices within the farm, nutritional and health status of the pigs (Nissen et al., 2011). The parasites detected in this study which are *Ascaris suum*, *Trichuris suis* and *Strongyloides ransomi* are major parasitic agents of digestive infections in pigs. They are capable of causing significant health challenge to the pig and serious economic losses to farmers. The high prevalence of *Ascaris suum* observed is an indication of unhygienic condition of the farm where these pigs are raised. Nissen et al. (2011) and Kagira et al. (2012) reported that absolute wet farm conditions, environment with poor hygiene and favourable temperatures can lead to high infection rate with *Ascaris suum*. They further stated that eggs of *Ascaris suum* can withstand adverse weather condition and some range of chemicals, and remain viable and infective for an extended period of time. According to reports, pig roundworm (*Ascaris suum)* is associated with pneumonia, hepatitis and weight loss. And these conditions are of negative advantage to the health and also of economic importance to the farmers (Obonyo et al., 2013). Finally, this study showed that pig rearing is challenged by factors which include unavailability of water, land, high-cost feed and climatic factors that incite disease prevalence, especially in the tropics where high humidity, temperature conditions support the spread of parasitic infections.

Conclusion

As a result of widespread of resistance of *Sis scrofa* gastrointestinal helminths against anthelmintic drugs, the established control strategies should be adopted to reduce the infection rate. Proper farm management strategy should be enforced.

Recommendations

1. Early diagnosis and treatment should be carried out
2. Education with respect to the management and hygiene practice should be intensified.
3. There should be regular deworming of the animals.

References

Adedipe, O. D., Uwalaka, E. C., Akinseye, V. O., Adediran, O. A., & Cadmus, S. I. B. (2014). Gastrointestinal Helminths in Slaughtered Cattle in Ibadan, South-Western Nigeria. *Journal of veterinary medicine*, *14*(1), 923561.

Agustina, K. K., Swacita, I. B. N., Oka, I. B. M., Dwinata, I. M., Traub, R. J., Cargill, C., & Damriyasa, I. M. (2017). Reducing zoonotic and internal parasite burdens in pigs using a pig confinement system. *Veterinary world*, *10*(11), 1347.

Aiyedun, J. O., & Oludairo, O. O. (2016). Prevalence of intestinal parasitism of swine in a North Central State of Nigeria. *Journal of Advanced Veterinary and Animal Research*, *3*(3), 278-281.

Atawalna, J., Attoh-Kotoku, V., Folitse, R. D., & Amenakpor, C. (2016). Prevalence of gastrointestinal parasites among pigs in the Ejisu Municipality of Ghana. *Scholars Journal of Agriculture and Veterinary Sciences*, *3*(1), 33-36.

Cheesbrough, M. (2006). *District laboratory practice in tropical countries, part 2*. Cambridge university press.

Eze, J. I., Onunkwo, J. I., Shoyinka, S. V. O., Chah, F. K., Ngene, A. A., Okolinta, N., ... & Onyenwe, I. W. (2010). Haematological profiles of pigs raised under intensive management system in South-Eastern Nigeria. *Nigerian Veterinary Journal*, *31*(2), 186-294.

FAO- Food and Agricultural Organisation (2008). Guidelines for Human Handling Transport and Slaughter of livestock. https://www.fao.org/docrep/011/i0291e00.htm

Kagira, J. M., Kanyari, P. N., Githigia, S. M., Maingi, N., Ng'ang'a, J. C., & Gachohi, J. M. (2012). Risk factors associated with occurrence of nematodes in free range pigs in Busia District, Kenya. *Tropical animal health and production*, *44*, 657-664.

Nansen, P., & Roepstorff, A. (1999). Parasitic helminths of the pig: Factors influencing transmission and infection levels. *International Journal for Parasitology*, *29*(6), 877-891.

Nissen, S., Poulsen, I. H., Nejsum, P., Olsen, A., Roepstorff, A., Rubaire-Akiiki, C., & Thamsborg, S. M. (2011). Prevalence of gastrointestinal nematodes in growing pigs in Kabale District in Uganda. *Tropical animal health and production*, *43*, 567-572.

Njoga, E. O., Onunkwo, J. I., Ekere, S. O., Njoga, U. J., & Okoro, W. N. (2018). Seroepidemiology of equine brucellosis and role of horse carcass processors in spread of Brucella infection in Enugu State, Nigeria. *Int. J. Curr. Res. Rev*, *10*, 39-45.

Obonyo, F. O., Maingi, N., Githigia, S. M., & Ng'ang'a, C. J. (2013). Farming practices and risk factors for transmission of helminths of free range pigs in Homabay District, Kenya.

Omoruyi, Z., & Agbinone, I. (2020). Gastrointestinal parasites among swine bred in Edo State, Nigeria. *African Journal of Clinical and Experimental Microbiology*, *21*(4), 349-353.

Symeonidou, I., Tassis, P., Gelasakis, A. I., Tzika, E. D., & Papadopoulos, E. (2020). Prevalence and risk factors of intestinal parasite infections in Greek swine farrow-to-finish farms. *Pathogens*, *9*(7), 556.