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Full Length Research Article

PREVALENCE AND ASSOCIATED RISK FACTORS OF PORCINE CYSTICERCOSIS INFECTION IN PIGS IN SOME COMMUNITIES OF CHIKUN LOCAL GOVERNMENT AREA, KADUNA STATE

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ABSTRACT
Porcine cysticercosis, caused by the larval stage of *Taenia solium*, is a major zoonotic and economic concern in endemic regions. This study investigated its prevalence and associated risk factors in Chikun Local Government Area (LGA) of Kaduna State, Nigeria. Seventy-five pigs were examined across three communities Maraban Rido, Sabon Tasha, and Ungwan Yelwa using post-mortem tongue inspection. An overall prevalence of 15 % was recorded, with Maraban Rido and Sabon Tasha each reporting 16 %, and Ungwan Yelwa 13.33 %. Female pigs exhibited higher infection rates, with prevalence within the female subgroup ranging from 37.5 % to 50.0 % across communities, compared to males. Adult pigs (> 2 years) had a significantly higher prevalence, ranging from 50.0 % to 55.0 %, than piglets (< 2 years), whose prevalence ranged from 0 % to 40 %. Relative risk analysis indicated a greater likelihood of infection in adult and female pigs, likely due to prolonged exposure to contaminated environments. DNA quantification of blood samples revealed variability in concentration and purity, highlighting the need for improved sample handling. These findings emphasize the importance of targeted control measures such as improved sanitation, confined pig farming, and enhanced diagnostic practices. The study supports a One Health approach to *T. solium* control in endemic areas.

Keywords: Porcine cysticercosis, *Taenia solium*, prevalence, risk factors, pig farming, Nigeria, One Health.

INTRODUCTION

Porcine cysticercosis is a parasitic infection caused by the larval stage (cysticerci) of *Taenia solium*, the pork tapeworm. This zoonotic disease involves pigs as intermediate hosts and results in the development of cysts in various tissues after ingestion of *T. solium* eggs, typically through food or water contaminated with human feces (Garcia *et al.,* 2014). Although porcine cysticercosis is often asymptomatic in pigs, its public health and economic implications are severe, particularly in low-resource settings where veterinary infrastructure is limited and pig farming systems are traditional and poorly regulated (Reeder & Palmer, 2001; Garcia *et al*., 2020). The infection is driven by several interconnected risk factors, including poor sanitation, free-range pig farming, and the use of untreated human waste as fertilizer. These practices allow pigs to scavenge in contaminated environments, promoting the ingestion of *T. solium* eggs and the continuation of the parasite's life cycle (Phiri *et al*., 2003; Musa *et al*., 2021). In endemic regions such as Latin America, sub-Saharan Africa, and Southeast Asia, these conditions have led to persistently high prevalence rates of porcine cysticercosis (Ito *et al*., 2001; Geerts *et al*., 2008; Sripa *et al*., 2018; Noh *et al*., 2019; Abebe *et al*., 2021). Gonzales *et al*. (2003) emphasized that pigs raised in open defecation areas or where pigpens are poorly maintained are at high risk, reinforcing the need for improved animal husbandry and sanitation policies. In contrast, countries with strict public health regulations and limited pork consumption such as many Muslim-majority nations have reported significantly lower or negligible infection rates (Flisser, 2002). However, in Nigeria, particularly in the northern and central states including Kaduna, studies have confirmed the endemicity of porcine cysticercosis due to widespread informal pig farming, poor sanitation, and insufficient meat inspection (Bui & Hena, 2008; Edia-Asuke *et al*., 2015; Akinwale *et al*., 2022). Additionally, epidemiological studies have shown that demographic factors such as age and sex significantly influence infection risk. Female pigs tend to show higher prevalence rates, likely due to their prolonged presence in herds for breeding, which increases their cumulative exposure to environmental contamination (Phasukkit *et al*., 2021). Adult pigs (> 2 years) are also more commonly infected than piglets, which may reflect the time-dependent accumulation of *T. solium* eggs from repeated environmental contact (Tran *et al*., 2021). Molecular diagnostic tools, such as PCR-based techniques, are crucial for accurate detection of porcine cysticercosis. However, inconsistent DNA purity and quality can limit the reliability of such tests. DNA quantification using NanoDrop spectrophotometry has revealed challenges, including variable concentrations and low A260 / A230 ratios, suggesting contamination or inefficient extraction protocols (Tran *et al*., 2021). Despite the recognized burden of porcine cysticercosis, data on its prevalence and associated risk factors remain limited in many parts of Nigeria. In Chikun Local Government Area (LGA) of Kaduna State, pig farming is widely practiced under extensive systems, with pigs often left to roam and scavenge. The absence of structured waste disposal systems and lack of regulated pig slaughter further exacerbate the transmission risk (Pawlowski *et al*., 2005; Ndimubanzi *et al*., 2010; Garcia *et al*., 2020). This study therefore seeks to assess the prevalence of porcine cysticercosis and identify associated risk factors in Chikun LGA. By investigating demographic influences, local farming practices, and diagnostic reliability, this research will provide critical epidemiological data to support the design of effective, evidence-based control strategies. The findings are expected to contribute to ongoing One Health efforts aimed at reducing the transmission of *T. solium* in Nigeria and other endemic regions (Gonzales *et al*., 2003; Akinwale *et al*., 2022).

MATERIALS AND METHODS

Study Area

The study was conducted in Chikun Local Government Area (LGA) of Kaduna State, Nigeria, an area known for intensive and semi-

intensive pig farming. Three major pig-rearing communities Maraban Rido, Sabon Tasha, and Ungwan Yelwa were selected for the study based on their population density, pig farming activity, and accessibility. The regions were characterized by an agrarian lifestyle, limited waste management infrastructure, and frequent open defecation, which collectively increase the risk of environmental contamination by *Taenia solium* eggs.

Sample Size Determination

The minimum sample size for this cross-sectional study was determined using Cochran's formula for estimating a population proportion (Cochran, 1977):

$$N = \frac{Z^2 Pq}{d^2}$$

Where:
N = Sample size
Z = Standard normal distribution at 95 % confidence interval = 1.96
P = Estimated prevalence (proportion) of porcine cysticercosis in the population
p = (1 – P)
d = Precision at 5 % (0.05)

The following assumptions were applied:

1. Estimated Prevalence (P): Due to the absence of recent localized data for Chikun LGA, a prevalence (P) of 22.2 % (0.22) was used. This value was derived from the mean prevalence reported in two recent studies conducted within Kaduna State (Edia-Asuke *et al.*, 2015; Akinwale *et al.*, 2022), providing a locally relevant and conservative estimate.
2. Confidence Level: 95 %, corresponding to a Z-score of 1.96.
3. Margin of Error (d): 10 % (0.1) was chosen to allow for a reasonable balance between precision and feasibility in a field-based study.

The formula was applied as follows:

$$\mathrm{N} = \frac{(1.96) \times 0.222 \times (1 - 0.222)}{0.1^2}$$

$$\mathrm{N} = \frac{3.8416 \text{ x } 0.222 \text{ x } 0.778}{0.01}$$

$$\mathrm{N} = \frac{0.663}{0.01}$$

N=66.3≈67 pigs

Study Design

A cross-sectional study was carried out between March and December, 2024 to determine the prevalence and associated risk factors of porcine cysticercosis in Chikun LGA. The target sample size was determined as 75 pigs, derived from a sample size calculation based on an estimated prevalence of 22.2 % from prior local studies in Kaduna State (see **Sample Size Determination**). This sample size was considered adequate for estimating prevalence with a margin of error of approximately ±10 % at the 95 % confidence level, which is acceptable for a field-based epidemiological survey in this setting. Despite aiming for the calculated target of 75, final recruitment was influenced by logistical field constraints, including limited access to slaughter events and farmer cooperation. Blood samples were collected from the 75 pigs using systematic random sampling and screened across the three selected communities (Maraban Rido, Sabon Tasha, and Ungwan Yelwa), with 25 pigs sampled from each location to ensure geographic representation. For each pig, demographic data (age and sex) were collected via farmer interviews and physical examination, classifying them as piglets (< 2 years) or adults (> 2 years). Following slaughter, carcasses underwent standard post-mortem inspection with visual and palpatory examination of the tongue and masseter muscles for cysticerci. Blood samples were aseptically collected into EDTA tubes from all pigs with suspected cysts and a random subset of negative cases for confirmatory PCR analysis. Additionally, a structured questionnaire was administered to pig owners to gather information on husbandry practices, sanitation, water sources, and deworming history (Garcia *et al.*, 2020). This multi-method approach enabled the assessment of both infection status and potential risk factors in the study population.

Sample Analysis

Collected blood samples were diagnosis following a two-step process to enhance accuracy:

Macroscopic and Microscopic Confirmation: Suspected cysts identified during post mortem tongue inspection were excised. Cyst morphology was examined under a light microscope after staining with eosin to confirm the presence of *T. solium* cysticerci, following standard parasitological protocols. (Phasukkit *et al.*, 2021)

Molecular Analysis (PCR): To provide molecular confirmation, five (5) positive samples were randomly selected from each of the three (3) communities (Maraban Rido, Sabon Tasha, and Ungwan Yelwa).

- **DNA Extraction:** Genomic DNA was extracted from whole blood samples using the QIAamp DNA Blood Mini Kit (Qiagen, Germany) according to the manufacturer's instructions.
- **DNA Quantification and Quality Control:** The concentration and purity of extracted DNA were assessed using a NanoDrop™ 2000 spectrophotometer. The A260/A280 and A260/A230 ratios were recorded to evaluate protein and organic/salt contamination, respectively.
- **Polymerase Chain Reaction:** PCR amplification was performed using species-specific primers targeting the *T. solium* mitochondrial *cox1* gene. The forward primer sequence was 5'-TTGTTGGGACTGCTTGATGC-3' and the reverse primer was 5'-CCTGCCCACCAAACATAAAA-3', as described by Tran *et al.* (2021). The reaction mix consisted of 12.5 µL of 2X PCR master mix, 1 µL of each primer (10 µM), 5 µL of template DNA, and nuclease-free water to a final volume of 25 µL. Thermocycling conditions followed the protocol by Tran *et al.* (2021): initial denaturation at 95°C for 5 min; 35 cycles of denaturation at 95°C for 30 s, annealing at 58°C for 30 s, and extension at 72°C for 45 s; followed by a final extension at 72°C for 7 min.
- **Electrophoresis:** The amplified PCR products were separated by agarose gel electrophoresis, following standard molecular biology protocols (Sambrook & Russell, 2001). A 1.5% agarose gel was prepared in 1X TAE buffer and loaded

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with PCR amplicons alongside a DNA molecular weight marker (ladder). The gel was run at a constant voltage of 100V for approximately 45 minutes and subsequently stained with ethidium bromide. The separated DNA fragments were visualized under ultraviolet (UV) light. A sample was considered positive for *T. solium* if a distinct band of approximately 450 base pairs (bp) was observed, corresponding to the expected size of the amplified *cox1* gene fragment.

Data Analysis

Descriptive statistics were used to calculate the prevalence of porcine cysticercosis in each community. Prevalence rates were expressed as percentages. Chi-square (χ^2) tests were applied to assess associations between prevalence and variables such as community, age, and sex of the pigs. Relative risk (RR) with 95% confidence intervals values were calculated to estimate the likelihood of infection between different subgroups. An RR of 1.0 (=) signifies equal risk between groups, while an RR greater than 1.0 (>) indicates an elevated risk (e.g., RR = 2.0 denotes twice the risk). Conversely, an RR below 1.0 (<) signifies a reduced risk, which can be interpreted as a protective effect. A p-value of < 0.05 was considered statistically significant. All analyses were conducted using Microsoft Excel and SPSS Version 23.

RESULTS AND DISCUSSION

Prevalence of Porcine Cysticercosis from all the study Communities

The overall and community-specific prevalence of porcine cysticercosis in Chikun LGA is summarized in Fig. 1. The figure illustrates the proportion of infected pigs across the three study communities—Maraban Rido, Sabon Tasha, and Ungwan Yelwa—providing a visual comparison of infection burden at the community level.

Prevalence of Porcine cysticercosis from all the study Communities

Out of 75 pigs screened across the three communities, 34 tested positive, yielding an overall prevalence of 45.33% (34/75).

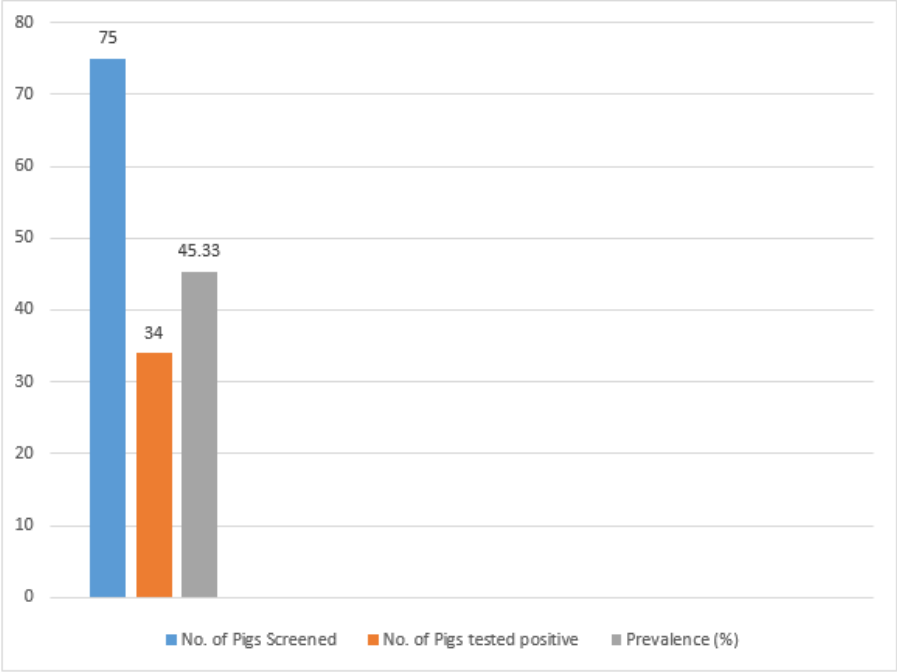

Fig. 1: Prevalence of Porcine cysticercosis from all the study Communities

Prevalence of Porcine Cysticercosis in some Communities

Table 1 presents the prevalence of porcine cysticercosis across the three study communities. Out of 75 pigs screened, 34 tested positive, yielding an overall prevalence of 45.33%. At the community level, Maraban Rido and Sabon Tasha each had 12 positive cases out of 25 pigs examined, resulting in identical prevalence rates of 16 % (12/25). Ungwan Yelwa recorded 10 positive cases out of 25 pigs, corresponding to a prevalence of 13.33 % (10/25). Statistical analysis using the chi-square test revealed no significant difference in prevalence across the three communities (χ^2 = 0.43, p = 0.8064), indicating a uniformly high level of infection throughout the study area

This study provides important insights into the prevalence of porcine cysticercosis in Chikun Local Government Area (LGA) of Kaduna State, Nigeria, shedding light on the ongoing health threat posed by *Taenia solium* in regions characterized by poor sanitation and traditional pig farming practices **(**Garcia *et al*., 2020; Musa *et al*., 2021**).** Among the 75 pigs screened across three communities Maraban Rido, Sabon Tasha, and Ungwan Yelwa an overall prevalence of 45.33 % was recorded, with the highest community specific prevalence of 16 % observed in both Maraban Rido and Sabon Tasha. Ungwan Yelwa followed closely with a prevalence of

13.33 %. These rates indicate relatively uniform endemicity across the region (P = 0.8064) as represented in Table 1, emphasizing the widespread environmental conditions such as poor sanitation, free-range pig farming, and inadequate veterinary oversight that sustain the parasite's life cycle (Garcia *et al*., 2020; Musa *et al*., 2021; Pawlowski *et al*., 2005). The high prevalence aligns with the significant burden reported in other endemic regions, including sub-Saharan Africa, Southeast Asia, and Latin America (Sripa *et al*., 2018; Noh *et al*., 2019; Abebe *et al*., 2021). While the calculated sample size for a precision of ± 10 % was 96, logistical constraints common in field-based studies limited the final sample to 75 pigs. This yields a slightly wider margin of error (± 11.3 %) but remains sufficient to detect a high prevalence and identify major risk factors in this preliminary assessment of Chikun LGA.

Table 1: Prevalence of Porcine cysticercosis in some communities

Communities	No. of Pigs Screened	No. of pigs tested positive	Prevalence (%)	P – Value
Maraban Rido	25	12	(16)	
Sabon Tasha	25	12	(16)	0.8064
Ungwan Yelwa	25	10	(13.33)	
TOTAL	**75**	**34**	**45.33**	

Relative Risk of Porcine cysticercosis in relation to Sex and Communities

Table 2 presents the distribution of porcine cysticercosis infection by sex and the associated relative risks for each community. Female pigs contributed a higher number of infections across all communities. In Maraban Rido, 8 out of 18 females (32 %) and 4 out of 7 males (16 %) were infected. In Sabon Tasha, infection was found in 9 out of 18 females (36 %) and 3 out of 7 males (12 %). In Ungwan Yelwa, 6 out of 16 females (24%) and 4 out of 9 males (16 %) were positive. The Relative Risk (RR) was 0.78 in Maraban Rido, 1.17 in Sabon Tasha, and 0.84 in Ungwan Yelwa. An RR of 1.17 in Sabon Tasha suggests a 17% higher risk of infection in females compared to males in that community. The RR values below 1.0 in Maraban Rido and Ungwan Yelwa reflect the calculation method; however, the absolute number and proportion of infected female pigs remain higher than male pigs in those communities.

The gender-based differences in infection rates observed in this study are particularly noteworthy. Female pigs consistently exhibited higher infection rates than their male counterparts, with prevalence rates of 36 % in Sabon Tasha, 32 % in Maraban Rido, and 24 % in Ungwan Yelwa, compared to 12 %, 16 %, and 16 % for males, respectively, as represented in Table 2. This gender disparity may be explained by the prolonged exposure of female pigs to the environment due to their reproductive roles, which often result in longer stays within the herd. As such, female pigs accumulate a higher environmental exposure over time, increasing their risk of ingesting *T. solium* eggs. Phasukkit *et al.* (2021) similarly reported that female pigs are more likely to be exposed to contaminated environments for extended periods, thereby enhancing their susceptibility to cysticercosis. The relative risk (RR) analysis supports this notion, showing a higher RR in Sabon Tasha (1.17) for females, while the RR for males was lower, below 1 in the other areas. These findings highlight the need for gender-specific interventions, particularly focusing on female pigs, to mitigate the risk of infection.

Table 2: Relative Risk of Porcine cysticercosis in relation to Sex and Communities

Gender	Community								
	Maraban Rido			Sabon Tasha			Ungwan Yelwa		
	No. of Pigs Examined	No. of Pigs tested positive	Prevalence (%)	No. of Pigs Examined	No. of Pigs tested positive	Prevalence (%)	No. of Pigs Examined	No. of Pigs tested positive	Prevalence (%)
Male	7	4	(16)	7	3	(12)	9	4	(16)
Female	18	8	(32)	18	9	(36)	16	6	(24)
TOTAL	**25**	**12**		**25**	**12**		**25**	**10**	
RR	**0.78**			**1.17**				**0.84**	

RR (=) 1.0 signifies equal risk i. e risk of infection is the same.
RR (>) 1.0 indicates an elevated risk i. e risk of infection is higher.

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RR (<) 1.0: signifies a reduced risk i. e risk of infection is lower.

Relative Risk of Porcine cysticercosis in relation to Age Pigs and Community

Table 3 presents the infection rates of porcine cysticercosis classified by age and the corresponding relative risks for each community. Adult pigs (>2 years) exhibited a consistently higher prevalence than piglets (<2 years). In Maraban Rido, 10 out of 20 adults (40 %) and 2 out of 5 piglets (8 %) were infected (RR = 1.25). In Sabon Tasha, 11 out of 20 adults (44 %) and 1 out of 5 piglets (4%) were positive (RR = 2.73). In Ungwan Yelwa, 10 out of 20 adults (40 %) were infected, while no infections were detected in the 5 piglets examined (0 %), resulting in an RR of 0.50. The relative risk (RR) of 2.73 in Sabon Tasha indicates that adult pigs had a higher risk of infection compared to piglets in that community. In contrast, RR value below 1.0 in Ungwan Yelwa reflect the calculation method; however, the absolute number and proportion of infected adult pigs remain higher than piglets in the community.

Age-specific prevalence also revealed that adult pigs (> 2 years) had significantly higher infection rates than piglets (< 2 years). In Sabon Tasha, 44 % of adults were infected, compared to just 4 % of piglets. A similar pattern was observed in Maraban Rido and Ungwan Yelwa, where adult pigs had infection rates of 40 %, while piglets had much lower rates of 8 % and 0 %, respectively, as represented in Table 3. The higher infection rates in adult pigs are likely due to prolonged exposure to contaminated environments, where they accumulate *T. solium* eggs over time. This trend is consistent with findings by Phasukkit *et al*. (2021), who noted that adult pigs, due to their longer lifespan and greater environmental exposure, are at higher risk of developing cysticercosis. The RR values for adults were notably high in Sabon Tasha (2.73), underscoring the significant risk that older pigs face in these communities. These findings suggest the importance of early intervention strategies to reduce the risk of cysticercosis in pigs, especially as they age.

Table 3: Relative Risk of Porcine cysticercosis in relation to Age of Pigs and Community

Age	**Community**								
	Maraban Rido			**Sabon Tasha**			**Ungwan Yelwa**		
	No. of Pigs Examined	**No. of Pigs tested positive**	**Prevalence (%)**	**No. of Pigs Examined**	**No. of Pigs tested positive**	**Prevalence (%)**	**No. of Pigs Examined**	**No. of Pigs tested positive**	**Prevalence (%)**
< 2 yrs (Piglet)	5	2	(8)	5	1	(4)	5	0	(0)
> 2 yrs (Adults)	20	10	(40)	20	11	(44)	20	10	(40)
TOTAL	**25**	**12**		**25**	**12**		**25**	**10**	
RR	**1.25**			**2.73**			**0.50**		

RR (=) 1.0 signifies equal risk i. e risk of infection is the same.
RR (>) 1.0 indicates an elevated risk i. e risk of infection is higher.
RR (<) 1.0: signifies a reduced risk i.e. risk of infection is lower.

Concentration and Purity of DNA Extracted from Blood Samples of *T. solium* Positive Pigs using Nano drop spectrometer from all the study communities

Table 4 presents the concentration and purity of DNA extracted from blood samples of *T. solium*-positive pigs, as quantified using a NanoDrop spectrophotometer. DNA concentrations from infected pigs ranged from 7.0 to 72.0 ng / µL. Purity ratios (A260 / A280) varied between 1.38 and 1.87, with several samples falling below the optimal range of 1.8–2.0, indicating potential protein contamination. Furthermore, low A260 / A230 ratios (as low as 0.13) suggested possible organic or salt contamination. The highest DNA concentration was observed in sample MR15 (72.0 ng / µL, A260 / A280 = 1.38), and the lowest in ST18 (7.0 ng / µL, A260 / A280 = 1.52). This variability underscores the challenges in field-based DNA extraction and highlights the potential impact of sample quality on the reliability of downstream molecular diagnostics (Tran et al., 2021).

The variability in DNA quality observed through NanoDrop spectrophotometric analysis further underscores the need for better sample handling protocols. DNA concentrations ranged from 7.0 ng / µL to 72.0 ng / µL, with A260 / A280 ratios between 1.38 and 1.87, and A260 / A230 ratios as low as 0.13, as represented in Table 4. These discrepancies in DNA purity suggest potential contamination or issues with the nucleic acid extraction process. Improving sample collection and handling procedures, along with standardizing DNA extraction protocols, could enhance the accuracy and reliability of diagnostic results. Tran *et al*. (2021) emphasize the importance of such measures in molecular diagnostics, as they can help ensure more precise and consistent results in the detection of *T. solium*. Polymerase chain reaction (PCR) targeting the *T. solium* mitochondrial *cox1* gene was successfully performed on genomic DNA extracted from blood samples. Amplification with the species-specific primers yielded a clear, distinct band of the expected size (~450 base pairs) in

samples confirmed to be positive by post-mortem inspection. No amplification was observed in negative control reactions, and positive control DNA (where available) produced the expected band, confirming the specificity of the assay. The PCR results provided molecular confirmation of the *T. solium* infections identified macroscopically, enhancing the diagnostic certainty for the reported prevalence. The findings of this study are consistent with global trends in areas where *T. solium* is endemic, such as sub-Saharan Africa, Southeast Asia, and Latin America. Poor sanitation, free-range pig farming, and environmental contamination are key drivers of cysticercosis transmission in these regions (Sripa *et al*., 2018; Noh *et al*., 2019; Abebe *et al*., 2021). Given the complex and interlinked nature of the problem, the control of porcine cysticercosis in Chikun LGA and similar endemic areas requires a multifaceted approach. An integrated One Health strategy that addresses both veterinary and environmental health is essential for controlling *T. solium* transmission. This includes improving sanitation infrastructure, restricting free-range pig farming, promoting confined pig housing, and increasing public awareness about the risks associated with improper waste disposal and the consumption of undercooked pork **(**Gonzales *et al*., 2003). Enhanced diagnostic capacities at local abattoirs are crucial for identifying and removing infected pork from the food chain, thus preventing the parasite from reaching human populations (Yusuf *et al*., 2021).

In conclusion, this study highlights the critical need for targeted interventions to reduce the prevalence of porcine cysticercosis in Chikun LGA. By focusing on gender and age specific risk factors in pigs, as well as addressing environmental contamination and improving diagnostic methods, more effective strategies can be developed to control *T. solium* transmission. Additionally, future research should explore the molecular epidemiology of *T. solium* in this region to better understand genetic variations and transmission dynamics, which could inform more effective and localized control strategies (Tran *et al*., 2021; Akinwale *et al*., 2022).

Table 4: Concentration and Purity of DNA Extracted from Blood Samples of *T. solium* Positive Pigs using Nano drop spectrometer from all the study communities

No of Samples	Participation number	ng/µL	A260/A280	A260/A230
1	MR6	13.8	1.57	0.19
2	MR10	60.6	1.38	0.37
3	MR15	72.0	1.38	0.36
4	MR20	15.4	1.41	0.22
5	MR22	11.7	1.59	0.17
6	ST1	54.0	1.42	0.33
7	ST5	9.6	1.73	0.15
8	ST11	10.8	1.68	0.16
9	ST15	13.5	1.56	0.20
10	ST18	7.0	1.52	0.16
11	UY2	8.2	1.44	0.14
12	UY4	7.2	1.87	0.13
13	UY7	10.2	1.60	0.60
14	UY9	12.3	1.54	0.18
15	UY18	11.9	1.54	0.20

MR: Maraban Rido; ST: Sabon Tasha; UY: Ungwan Yelwa

Conclusion

Porcine cysticercosis poses a significant public health and economic burden in Chikun Local Government Area, Kaduna State, Nigeria. The overall prevalence of 15 %, with particularly high rates in Maraban Rido and Sabon Tasha (16 % each), emphasizes the endemicity of *Taenia solium* in areas characterized by poor sanitation and traditional pig-rearing systems. Notably, female pigs exhibited higher infection rates than males across all communities, likely due to biological and behavioral exposure factors. Similarly, adult pigs were significantly more affected than piglets, suggesting the importance of prolonged environmental exposure in disease transmission.

These findings underscore the critical need for targeted interventions, including improvements in sanitation, confinement of pigs, and routine meat inspection to prevent the entry of infected pork into the food chain. Community-based education aimed at pig farmers can further raise awareness about the risks associated with free-range pig farming and poor waste management practices. Furthermore, inconsistencies observed in DNA purity during NanoDrop spectrophotometric analysis highlight the importance of improving sample handling and diagnostic procedures. Future research should explore the molecular diversity of *T. solium* strains circulating in the region to better understand transmission patterns and develop more effective, localized control strategies. A One Health approach, integrating veterinary and environmental health initiatives, remains essential to achieving sustainable control of porcine cysticercosis in endemic communities such as Chikun LGA.

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