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Preventing Outbreaks: Approaches to Swine Disease Detection and Treatment in Buenavista, Guimaras, Philippines

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Abstract. This study utilized a descriptive design employing the quantitative method to analyze data using frequency counts and percentages to assess swine management practices among fifty swine raisers in Buenavista, Guimaras. Surprisingly, 6% of the herd was diagnosed with African Swine Fever (ASF), while 90% showed no symptoms, suggesting good overall health. However, relying solely on external indicators may miss preclinical cases or asymptomatic carriers. Notably, 70% of the pigs received no treatment, raising concerns about the medical practices employed. Furthermore, in 70% of cases, the type or purpose of medication was not documented, and 74% had no recorded treatment expenses, highlighting gaps in disease management and financial tracking. These findings align with previous research suggesting that swine treatment practices are inadequate or poorly documented.

Keywords: Dewormer; Disease surveillance; Illness; Medication; Pig health; Prevention.

1.0 Introduction

Prompt detection of illnesses in pigs is crucial for maintaining herd health, ensuring food security, and mitigatin g economic losses in the swine industry. The timely detection of infections such as African Swine Fever (ASF) and other respiratory ailments is crucial since they can result in considerable morbidity and mortality among pig populations. A primary benefit of early disease detection is the ability to implement swift measures that can prevent the spread of illnesses across populations. Postmortem diagnostics have been shown to enhance disease surveillance and facilitate the early detection of novel animal diseases and zoonoses (Schediwy et al., 2018). This proactive technique enables the identification of disease patterns and the implementation of control measures before outbreaks intensify, thus protecting the health of both animals and humans (Balmer et al., 2015). Research indicates that studying cough sounds can effectively detect respiratory disorders, enabling prompt management measures (Song et al., 2022; Chung et al., 2013). This technology enables the identification of unhealthy animals while reducing reliance on pharmaceuticals, hence alleviating concerns over antimicrobial resistance in cattle (Jorquera-Chavez et al., 2020).

Identifying diseases in Guimaras is crucial, particularly for public health and managing infectious diseases. Effective disease detection systems are essential for promptly identifying outbreaks, which can significantly reduce morbidity and mortality rates associated with infectious diseases. Given Guimaras's unique geographical

and socioeconomic conditions, implementing robust disease surveillance systems is crucial for safeguarding public health. An essential benefit of disease detection is the ability to monitor and respond to epidemics promptly.

Public health surveillance systems are designed to systematically collect, analyze, and interpret health data, enabling health authorities to identify trends and detect fluctuations in disease incidence (Birkhead et al., 2015). In regions like Guimaras, where resources may be limited, establishing efficient monitoring systems could allow for the swift detection of disease outbreaks, enabling suitable public health interventions (Halliday et al., 2012). This is particularly relevant to zoonotic diseases, which are prevalent in tropical regions and can present significant public health threats (Vrbova et al., 2010; Salyer et al., 2017).

Moreover, behavioral monitoring technology, such as automated tracking systems, can provide substantial insights into the health status of individual pigs. Farmers can detect health problems early and take necessary actions to mitigate losses by observing deviations from standard behavior patterns (Cowton et al., 2019; Tran & Thanh, 2023). This tailored monitoring is essential for enhancing animal welfare and optimizing production efficacy. The importance of immunization and biosecurity measures must be recognized in conjunction with technical advancements. Vaccination programs are crucial for controlling outbreaks of diseases like ASF, which can significantly affect pig populations and disrupt food supply chains (Colomer et al., 2020). Implementing robust biosecurity measures with early detection strategies builds a formidable defense against disease outbreaks, safeguarding the swine sector. Hence, this study.

2.0 Methodology

2.1 Research Design

A descriptive research design was used, employing the quantitative method in analyzing data using frequency counts and percentages. A Universities Federation for Animal Welfare (UFAW) (2022) questionnaire was adapted and used as a data-gathering tool. The one-on-one interview was conducted to ensure the accuracy of the answers given by the interviewees. Moreover, addressing the sensitivity of some questions and the need for clear, sharp, and explicit answers compel the need for a personal interview approach.

2.2 Research Locale

The study's primary focus was the Province of Guimaras' municipality of Buenavista. Buenavista is one of the five towns that make up the Province, situated at the northernmost point of Guimaras Island. The municipality has 36 barangays, 17 of which are on the shore and 19 of which are inland. The classification includes seven (7) urban barangays and 29 rural barangays. Its entire agricultural land area is 6,320.7509 hectares.

2.3 Research Participants

This study used a purposive sampling technique. The respondents were identified based on the list of the raisers from the Department of Agriculture of the Local Government. All recognized swine raisers in the Municipality of Buenavista were study participants.

2.4 Research Instrument

The researcher utilized the Universities Federation for Animal Welfare (UFAW) (2022) questionnaire. The instrument was subjected to the face validation technique, also known as validation by jury opinion. This will require that the test instrument be presented to a jury of experts for their opinion on whether the instrument could gather the needed data as intended. The researchers developed a survey questionnaire with inputs based on interviews and feedback discussion.

2.5 Data Gathering Procedure

The researchers obtained authorization to perform the study using a letter addressed to the relevant municipality office, specifically the Department of Agriculture (DA) office. Consequently, the researchers also issued a letter to the relevant swine raisers. Additionally, the researcher and skilled enumerators interpreted the terms by the dialect the animal raisers spoke when collecting information from the raisers above.

2.6 Ethical Considerations

The author adhered to ethical guidelines when conducting the study and writing the publication. All information, including the respondents' answers and personal identities, has been recorded and handled with extreme confidentiality. The questionnaire material was first discussed to help them comprehend and be aware of the data that would be gathered from their answers. They freely responded to the queries.

3.0 Results and Discussion

3.1 Disease Detection Capabilities

Table 1 shows 3 cases (or 6%) had African Swine Fever (ASF) illness. Due to its high mortality rates in pigs, ASF is a highly contagious viral illness that can have serious economic repercussions. ASF was found in 6% of the studied population, which is concerning because its presence can indicate a possible outbreak or persistent threat in the area. In these situations, vigilance and biosecurity precautions would be crucial to stop the spread. The respiratory ailment, pneumonia, was found in 1 instance (2% of the total), similar to bacterial diarrhea or scouring. Even though it appears less frequently in this data, pneumonia, and diarrhea can still pose serious health risks, especially if environmental factors like poor ventilation or crowded conditions spread, particularly in young piglets. To lessen its consequences, treatment and early detection are crucial.

Table 1. Detected diseases in pigs in the last 6 months were detected by swine raisers

Diseases	Frequency	Percentage
African swine fever	3	6.0
Pneumonia	1	2.0
Bacterial diarrhea/Scouring	1	2.0
No response/detection	45	90.0
Total	**50**	**100.0**

Interestingly, 45 respondents (90%) had no disease diagnosed for no reaction or detection. This is a favorable indicator, indicating no apparent signs of sickness during the testing period or that most of the pig population in this sample might be in good condition. It is essential to consider whether the detection techniques were sufficient or whether any preclinical or newly developing illnesses might have gone unnoticed. As supported by Zhou et. Al. (2020), rapid detection capability is crucial because it allows swine raisers to implement control measures promptly, thereby reducing the spread of these highly contagious diseases. It implies that rapid detection is critical, enabling swine producers to respond proactively through training to prevent the spread of contagious diseases, ensure healthier populations, and safeguard economic stability.

As shown in Table 2, vomiting, which was noted in 6% of pigs, could be a sign of gastrointestinal problems that could be related to poisons, infections, or nutrition. Coughing may indicate respiratory infections, even though it is only found in 2% of cases. In 2% of the cases, yellowish diarrhea—a crucial sign of gastrointestinal distress—also surfaced. In 90% of situations, the absence of observed signs and symptoms is good for the herd's health. On the other hand, focusing just on outward signs can cause asymptomatic carriers or preclinical illnesses.

Table 2. Detected signs and symptoms in pigs by swine raisers

Diseases	Frequency	Percentage
Vomiting	3	6.0
Coughing	1	2.0
Yellowish diarrhea	1	2.0
No detection	45	90.0
Total	**50**	**100.0**

Swine diseases can lead to significant economic losses due to decreased productivity, increased veterinary costs, and potential market restrictions. For instance, diseases such as Porcine Circovirus Type 2 (PCV2) and African Swine Fever (ASF) have been shown to cause severe economic repercussions in swine production systems (Chen, 2023; Afolabi et al., 2017). Moreover, awareness of disease symptoms among farmers can facilitate early detection and intervention, essential in controlling outbreaks and minimizing losses (Guinat et al., 2016). Understanding the signs and symptoms of swine diseases is crucial for swine raisers, as it directly impacts animal health, farm productivity, and economic viability.

3.2 Treatment Practices

Table 3 of the data indicates that the therapies for the condition were inconsistent over the six months, with higher levels of intervention during some months. Just 30% of the cases received any treatment during the six months, and 70% received no treatment. Treatment rates were mild in March and April (4% and 6%, respectively), but they appeared to rise in May (8%) and July (10%). With only 2% of cases receiving care in June, treatments were significantly dropped.

Table 3. Treatment practices among swine raisers

Date	Frequency	Percentage
March 2023	2	4.0
April 2023	3	6.0
May 2023	4	8.0
June 2023	1	2.0
July 2023	5	10.0
No administration	35	70.0
Total	**50**	**100.0**

Effective disease treatment practices, including timely vaccination and monitoring, are essential to controlling these outbreaks and minimizing their impact on farm operations (Pileri & Mateu, 2016). This implies that there is a low overall rate of treatment administration because of a low rate of disease detection and that many instances have gone unreported or undetected. The increase in rainy months may result from changes in the weather, the size of the herd, or biosecurity procedures.

Table 4 shows that in 30% of cases, medicine was explicitly given to treat an illness. This shows that some swine farmers are taking proactive measures to contain disease outbreaks and are treating afflicted pigs. Even though the percentage is small, it indicates that some people place a high value on pig health and disease control. The data is consistent with past findings that more treatment interventions occurred in some months (such as May and July). The data's most alarming finding is that, in 70% of cases, neither the medication's intended use nor its response were noted.

Table 4. Purpose of medication administered.

Purpose	Frequency	Percentage
Treatment of diseases	15	30.0
No response	35	70.0
Total	**50**	**100.00**

Vaccines and treatments must be administered proactively to control these illnesses and preserve herd health, which in turn affects production and profitability in swine farming (Racewicz et al., 2021). It implies that medication may have been administered in some instances, but the cause for treatment may not have been adequately documented. Inadequate documentation can result in gaps in disease management, making it more challenging to monitor the herd's health and evaluate the efficacy of treatments.

One encouraging indication that some swine raisers are actively managing parasites is that 12% of the instances in Table 5 involved the administration of ivermectin. Twelve percent of the instances involved the administration of other pharmacological medications, suggesting efforts to treat a wider variety of illnesses, such as viral and bacterial infections.

Table 5. Administration of medication

Type	Frequency	Percentage
Ivermectin	6	12.0
Other pharmaceutical drugs	6	12.0
Natural medicines	1	2.0
No response	37	74.0
Total	**50**	**100.00**

When it comes to administering therapies, swine raisers mostly rely on pharmaceutical interventions, as seen by the limited usage of natural medications (2%). 74% of cases had neither a recorded response nor a drug type, which is in line with earlier data that indicated many individuals were not receiving therapy. It is understanding

the specific diseases these medications target allows swine raisers to tailor their treatment protocols effectively (Ichinose et al., 2022). It implies that medication administration among raisers depends on understanding the disease and its effectiveness in treating animal ailments.

The information in Table 6 sheds light on how much pigs' treatments cost. Treatments within this price range (1–50) comprise about 12%. These cheap prices probably correspond to modest medical treatments or low-cost prescription drugs, including Ivermectin or generic antibiotics. Treatment costs for five instances (10%) ranged from Php 51 to Php 100. This range may represent the cost of somewhat more expensive drugs or greater dosages, signifying moderate outlays for treating illness.

Table 6. Cost of medication

Cost (Php)	Frequency	Percentage
1-50	6	12.0
51-100	5	10.0
101-200	4	8.0
No response	35	70.0
Total	**50**	**100.00**

In four cases (8%), treatments cost between Php 101 and Php 200. This group has the highest cost, indicating that specific therapies need more substantial intervention or more costly prescription medications. Thirty-five cases, or seventy percent, had no treatment costs recorded. This is consistent with other research showing that most treatment administrations are either lacking or improperly documented in terms of treatment costs. The welfare of pigs is closely linked to their health status, which is influenced by the availability and affordability of medications. Pigs that suffer from untreated health issues may experience pain and distress, leading to compromised welfare and increased veterinary costs due to the need for more intensive care (Ferrari et al., 2021). By ensuring access to affordable medications, farmers can maintain better health standards within their herds, which enhances animal welfare and contributes to improved productivity and reduced costs associated with disease management (Ferrari et al., 2021). This implies that the medications for pigs are available in the community at a very affordable price, resulting in affordable medications.

4.0 Conclusion

Raisers in Buenavista, Guimaras, have significant disparities in their swine management practices. Even though 90% of the herd had no apparent symptoms, relying just on symptoms could result in asymptomatic or preclinical infections going unnoticed; this is demonstrated by the fact that 6% of the population had African Swine Fever. The most important discovery is that 70% of the pigs received no therapy, raising questions about adequate healthcare. Furthermore, the same percentage of instances without paperwork about the nature and purpose of medication points to inadequate record-keeping, which is made worse by the fact that 74% of cases need treatment expense information. These results are consistent with more extensive research that suggests better management and documentation are necessary to protect herd health and ensure efficient disease control. They also highlight the need for improved illness detection, treatment procedures, and record-keeping among swine raisers.

5.0 Contributions of Authors

This work has only one author, who performed the writing, editing, data analysis, and encoding.

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7.0 Conflict of Interests

Regarding this paper's research, writing, and publication, the author states they have no conflicts of interest.

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