

DOG OWNER PARTICIPATION IN THE RABIES VACCINATION PROGRAM IN RURAL AREAS (CASE STUDY OF RABA AND NTORI VILLAGES)

Fatun Anggraini¹, Khairunnisah², Kharismafullah^{3*}

¹⁻³Agribusiness Study Program, AMA Polytechnic, Bima City, Indonesia

*Corresponding author email: kharismafullah@poltekama.ac.id

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ABSTRACT

This study aims to analyze the level of dog owner participation in the rabies vaccination program in Raba and Ntori Villages, Woha District, Bima Regency, and identify influencing factors. The study used a quantitative descriptive approach supported by qualitative analysis based on secondary data obtained from the Bima Regency Animal Husbandry and Animal Health Service, the Central Statistics Agency, and related scientific publications. Quantitative analysis was conducted to calculate the vaccination participation rate, while qualitative analysis was used to examine social, economic, and institutional factors that influence community participation. The results showed that the level of dog owner participation in the rabies vaccination program in Raba Village reached 76.54%, while in Ntori Village it was 23.46%. This difference is influenced by the level of community knowledge and awareness, access to vaccination services, socioeconomic conditions, and perceptions of vaccine safety. Raba Village had a higher participation rate due to more intensive socialization and more accessible access to vaccination. Conversely, low participation in Ntori Village was due to limited geographic access, minimal counseling, and negative perceptions of vaccination. These findings confirm that the success of rabies vaccination programs in rural areas is determined not only by vaccine availability but also by active community involvement and effective outreach strategies. Therefore, a community-based approach and cross-sector coordination are needed to increase vaccination coverage and support sustainable rabies eradication efforts in Bima Regency.

Keywords: Rabies, Vaccination, Owner Participation, Dogs, Rural Areas

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INTRODUCTION

Rabies is an acute zoonotic disease caused by the Lyssavirus that attacks the central nervous system, with a fatality rate of nearly 100% once clinical symptoms appear. To date, rabies remains a major animal and public health problem in many developing countries, including Indonesia. Domestic dogs (*Canis familiaris*) are known to be the primary reservoir of

rabies and are responsible for over 99% of human rabies transmissions, particularly in rural and semi-rural areas (WHO, 2024).

Rabies is an infectious disease caused by the rabies virus and can be transmitted through animal bites, especially dogs. (Rebuma & Mehdipour, 2024), emphasizes that rabies is a deadly but preventable zoonotic disease. Successful rabies control depends heavily on animal vaccination, public education, and cross-sector collaboration. Although vaccination programs have been routinely implemented by the government, rabies cases are still found in some rural areas. Low participation of dog owners in vaccination programs is one of the main causes of not achieving optimal immunization coverage.

Raba and Ntori Villages are two rural areas in Wawo District, Bima Regency, with a relatively high dog population and are the focus of the rabies vaccination program in Bima Regency. Although the vaccination program has been implemented regularly, the participation rate of dog owners in the two villages still shows significant variation. (Soetanto et al., 2021), it was found that the level of dog owner participation in vaccination is significantly influenced by knowledge, individual beliefs, and the community's socioeconomic conditions. This raises questions about the factors that influence community participation in the rabies vaccination program.

This study aims to analyze the level of dog owner participation in the rabies vaccination program in Raba and Ntori Villages using secondary data. This analysis is expected to provide an overview of the current state of rabies vaccination implementation in rural areas and serve as a basis for formulating strategies to increase community participation in sustainable rabies eradication efforts.

METHODS

This study employed a quantitative descriptive approach supported by qualitative analysis. This approach was chosen to describe the level of dog owner participation in the rabies vaccination program in Raba Village and Ntori Village, Wawo District, Bima Regency, with 243 dog owner respondents. Based on available secondary data, descriptive analysis was used to assess the percentage of participation, while qualitative analysis was used to understand the factors influencing this level.

The research was conducted in Raba and Ntori Villages, Woha District, Bima Regency, West Nusa Tenggara. These two villages were chosen because they have a relatively high dog population and are the locations for the rabies vaccination program implemented by the Bima Regency Animal Husbandry and Animal Health Service. Data collection and analysis were conducted in October 2024.

This study uses secondary data, namely data obtained from agencies and official sources without conducting primary data collection in the field. Data sources include: Bima Regency Animal Husbandry and Animal Health Service: annual report of the rabies vaccination program, number of vaccinated dogs, and vaccination coverage area. Woha District Animal Health Center: data on vaccination implementation, number of vaccinators, and vaccination schedule. Central Statistics Agency (BPS): demographic and socioeconomic data of the Raba and Ntori Village communities. Previous scientific publications and research reports relevant to community participation in the rabies vaccination program.

Data was collected through several stages in the form of Documentation Study (Collecting official reports, statistical data, and publications related to the implementation of rabies vaccination in the research area), Literature Review (Reviewing the results of previous research that discusses factors that influence community participation in animal vaccination programs), Data Verification (Conducting cross-checks between data sources to ensure the accuracy and consistency of the information used).

Data Analysis Techniques

Data analysis was carried out in two stages:

1. Quantitative Analysis:
 - a. Calculate the participation rate using the formula:

$$\text{Participation Rate (\%)} = (\text{Number of Vaccinated Dogs} / \text{Total Dog Population}) \times 100\%$$
 - b. Compare the participation rates between Raba Village and Ntori Village.
 - c. Present the results in tables and graphs for easier interpretation.
2. Qualitative Analysis:
 - a. Identify factors influencing participation based on the results of the literature review and field reports.
 - b. Analyze the relationship between social, economic, and institutional factors and the level of community participation.

This study used only secondary data without conducting field surveys or direct interviews with dog owners. Therefore, the analysis focused on a general overview of participation rates and the factors influencing them, based on the available data. This research method is expected to provide a comprehensive overview of dog owner participation levels in rabies vaccination programs in rural areas and serve as a basis for decision-making to improve the effectiveness of future vaccination programs.

RESULT AND DISCUSSION

1. General Description of the Research Area

Raba and Ntori Villages are two villages in Woha District, Bima Regency. They have different socioeconomic and geographic characteristics, but both have a relatively high pet dog population. Based on data from the Bima Regency Animal Husbandry and Animal Health Service (2024), the number of dogs vaccinated against rabies was 243, with 186 in Raba Village and 57 in Ntori Village. Both villages were prioritized for the rabies vaccination program due to the presence of suspected rabies dog bite cases in previous years.

2. Characteristics of Vaccinated Dogs

Based on secondary data from the 2024 rabies vaccination activity report, the characteristics of vaccinated dogs in Raba and Ntori Villages can be seen from several aspects, namely age, sex, ownership status, and purpose of care.

Table 1. Characteristics of Vaccinated Dogs Based on Age in Raba Village and Ntori Village

Age of Dogs Vaccinated Against Rabies	Raba Village		Raba Village	
	Total	Persentase (%)	Total	Persentase (%)
1-2 years	79	42,47	42	73,69
3-4 years	90	48,39	12	21,05
5-6 years	17	9,34	3	5,26
Total	186	100,00	57	100,00

Secondary data: processed in 2025

Table 1 shows that the majority of vaccinated dogs were in the 1–4 year age group, accounting for approximately 81% in Raba Village and 95% in Ntori Village. Young dogs are more accessible because they are typically kept around homes and interact more frequently with their owners. Dogs over 5 years old have lower vaccination rates because they are often allowed to roam and are difficult to catch during vaccinations.

This finding aligns with previous research indicating that productive-age dogs tend to have a greater chance of being vaccinated than older dogs, particularly in rural areas with free-range housing systems (Swedberg *et al.*, 2024).

Table 2. Characteristics of Vaccinated Dogs by Sex in Raba and Ntori Villages

Gender of Dogs Vaccinated Against Rabies	Raba Village		Raba Village	
	Total	Persentase (%)	Total	Persentase (%)
Males	83	44.62	30	52,63
Females	103	55,38	27	47,37
Total	186	100,00	57	100,00

Secondary data: processed in 2025

The distribution of vaccinations based on gender, based on Table 2, shows that male dogs were vaccinated less often than female dogs. In Raba Village, 55% of vaccinated dogs were female, while in Ntori Village, 53% were male. This is due to the tendency of people to keep male dogs as house or garden guards in Ntori Village, while female dogs are often left unsupervised. Studies in Southeast Asia (including Indonesia) often highlight that owner perceptions of a dog's usefulness significantly influence vaccination decisions (Arief *et al.*, 2017).

The results showed that the ownership status of vaccinated dogs was 100% private. This is due to several factors, such as the purpose of keeping them as house or field and garden guards. Dogs with permanent owners showed higher vaccination rates than stray or semi-stray dogs. The low vaccination rate among stray dogs is due to difficulties in capturing them and a lack of public awareness about reporting unowned dogs. Previous research confirms that ownership status is a key determinant of rabies vaccination success, with dogs with clear owners having a significantly higher chance of vaccination than unowned dogs (Hampson *et al.*, 2015).

Dogs are kept in both villages primarily for security purposes, such as home and garden security. In Raba Village, vaccinated dogs are kept as house and garden guards, while in Ntori Village, a small number of dogs are also kept for hunting or as pets. Dogs used for guarding the house are more easily accessible to vaccination officers because they are usually found near yards.

3. Dog Owner Participation Rate in the Vaccination Program

Secondary data shows that the level of dog owner participation in the rabies vaccination program in both villages varies. Based on the 2024 vaccination activity report, the following results were obtained:

Table 3. Dog Owner Participation Rate in the Vaccination Program

Villages	Vaccinated Dog (Tail)	Participation Rate (%)
Raba	186	76,54
Ntori	57	23,46
Jumlah	243	100,00

Secondary data: processed in 2025

This difference in participation rates indicates that Raba Village has a higher level of community involvement (77%) compared to Ntori Village (approximately 23%). This may be

due to differences in community awareness, the effectiveness of outreach programs, and ease of access to vaccination services.

4. Factors Influencing Participation Rates

a. Community Knowledge and Awareness

The community of Raba Village has a better level of knowledge regarding the dangers of rabies and the benefits of vaccination, as evidenced by a participation rate of 77%. Regular outreach activities conducted by animal health workers and village officials contribute to increased public awareness. Conversely, in Ntori Village, outreach activities are still limited and have not reached all dog owners, resulting in some community members not understanding the importance of vaccination. (Wicaksana & Raya, 2024) Good knowledge leads to better preventive measures, such as vaccinating pets and preventing animals from roaming freely.

b. Access to Vaccination Services

Accessibility is a crucial factor in determining participation rates. In Raba Village, vaccination sites are strategically located within easy reach of residents. Meanwhile, in Ntori Village, some areas are geographically difficult to reach, making dog owners reluctant to bring their pets to vaccination sites. The limited number of vaccinators also slows down the vaccination process in the village.

c. Social and Economic Factors

The socioeconomic conditions of the community also influence participation rates. Dog owners with higher levels of education and income tend to better understand the importance of vaccination and are more willing to participate. In Ntori Village, the majority of residents work as farmers and are highly mobile, making it difficult to find time to participate in vaccination activities. Furthermore (Wijaya et al., 2023), the program must consider the socioeconomic and cultural differences between owners of purebred dogs (middle to upper class) and those of domestic dogs (middle to lower class).

d. Perceptions of the Vaccination Program

A small percentage of residents in Ntori Village still hold negative perceptions of vaccination, such as the belief that vaccines can weaken or make dogs sick. The lack of accurate information has led to doubts about vaccine safety. This highlights the need for more intensive public education.

5. General Discussion

The results of this study indicate that the characteristics of vaccinated dogs are closely related to their owner's level of participation. Dogs that are regularly cared for, are young, and serve as guardians are more easily accessible to vaccination officers. Raba Village exhibits a higher vaccination rate because most of the dogs in the village are pets and are well-supervised. Conversely, in Ntori Village, the number of privately owned dogs is affected by several factors, such as difficulty in accessing them and a lack of owner awareness of vaccination, which results in lower vaccination coverage.

This finding aligns with research (Putu et al., 2017), which states that the success of rabies vaccination in rural areas is strongly influenced by the characteristics of the dog population and the level of owner involvement. Therefore, vaccination strategies need to be tailored to the social conditions and dog-keeping behaviors in each region.

6. Implications of Research Findings

This analysis shows that increasing rabies vaccination coverage depends not only on vaccine availability but also on understanding the characteristics of the dog population and owner behavior. Local governments need to strengthen cross-sectoral coordination between livestock agencies, animal health centers, and village governments, and develop a community-

based approach to reaching stray and semi-stray dogs. This approach is expected to increase the effectiveness of rabies vaccination programs and support the achievement of rabies-free targets in rural areas.

CONCLUSION

Based on the results of secondary data analysis on the level of dog owner participation in the rabies vaccination program in Raba Village and Ntori Village, Woha District, Bima Regency, it can be concluded that community participation levels show significant differences between the two villages. Raba Village has a high participation rate of 76.54%, while Ntori Village only achieved 23.46%. This difference reflects variations in awareness, accessibility, and socioeconomic conditions in each region.

Several key factors influencing participation rates include:

1. Community Knowledge and Awareness – Raba Village has a higher level of knowledge and awareness of the dangers of rabies and the benefits of vaccination, thanks to more intensive outreach activities.
2. Access to Vaccination Services – Easily accessible vaccination locations in Raba Village increase participation, while the difficult geographical access of Ntori Village is a major obstacle.
3. Social and Economic Factors – Community education and income levels influence willingness to participate in the vaccination program.
4. Perception of the Vaccination Program – Negative perceptions persist among some residents of Ntori Village, hindering participation.

In general, the success of rabies vaccination programs in rural areas depends heavily on the characteristics of the dog population, owner behavior, and the effectiveness of outreach and vaccination services. To increase vaccination coverage in the future, a community-based strategy is needed that actively involves the village government, animal health workers, and the community. This approach is expected to strengthen public awareness, expand vaccination coverage, and support efforts towards a sustainable rabies-free region.

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