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Determinants of Pet Owners' Knowledge, Attitudes, and Practices on Animal Bites and Rabies Prevention and Control in the Municipality of Alaminos, Laguna: A Health Belief Model Approach

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Abstract

Background: Despite ongoing national efforts to eliminate rabies, the Philippines continues to experience high animal bite incidence and human rabies deaths. Local governments face challenges compounded by limited understanding of pet owners' beliefs and behaviors. This study aimed to determine how pet owners' knowledge, attitudes and practices (KAP) toward animal bites and rabies prevention and control in Alaminos, Laguna are influenced by the Health Belief Model.

Methodology: A cross-sectional survey was conducted among 402 randomly selected pet-owning households using an HBM-based questionnaire. KAP scores were analyzed using descriptive statistics and non-parametric tests.

Results: There were significant positive correlations between knowledge versus attitudes ($\rho=0.385$, $p<0.001$), and between attitudes versus practices ($\rho=0.372$, $p<0.001$), but the correlation between knowledge versus practices was positive but weak despite being statistically significant ($\rho=0.157$, $p=0.002$). Dog owners who acquired pets from breeders had higher rates of vaccination and registration. Age, employment status, information source, and exposure history significantly influenced KAP, while education and sex did not show consistent patterns. **Conclusion:** Pet owners' knowledge of animal bites and rabies does

not consistently lead to safe practices. Strategies that will focus on improving attitudes, addressing behavioral barriers, and engaging communities through practical, trust-building approaches will be more effective than knowledge alone in strengthening rabies prevention and control.

Keywords

Animal bites, Rabies, KAP survey, Health Belief Model

1. Introduction

Rabies is a neglected tropical disease (NTD) that poses a significant public health concern, primarily affecting impoverished and vulnerable populations. It exists in over 150 countries, resulting in approximately 59,000 human deaths worldwide annually, with the majority occurring in Asia and Africa. Alarming, 40% of these fatalities affect children under 15 years old. Rabies is almost 100% fatal once clinical signs appear, making swift action crucial [1,2].

Rabies is a zoonotic disease caused by the rabies virus (RABV) of the *Lyssavirus* genus [3,4]. Dogs are the primary reservoir, causing 90-99% of human rabies deaths worldwide [4,5,6,7]. Accurately estimating its burden remains difficult

due to scarce dog bite data. Dog bites cause millions of injuries yearly across low- and middle-income countries (LMICs). These countries have higher dog bite fatality rates due to rabies prevalence and healthcare access barriers, causing an estimated economic cost of US\$8.6 billion [6]. Challenges in LMICs include maintaining dog vaccination coverage, affordability of post-exposure prophylaxis (PEP), and weak surveillance systems [1,8].

In the Philippines, animal bites persist as a significant cause of morbidity despite declines in reported cases. Animal bite cases are still alarmingly high [9] with 503,167 documented cases and a case rate of 450.98 cases per 100,000 people in 2022 [10]. Dog bites are the primary source of human rabies, with 285 reported cases of rabies in 2007 and 276 cases in 2018 [9]. DOH aims to declare the Philippines rabies-free by 2030 [10,11,12] by implementing strategies such as providing PEP to all Animal Bite Treatment Centers (ABTCs), allocation of pre-exposure prophylaxis (PrEP) to high-risk individuals and school children in high incidence zones; enhanced public awareness through information, education and communication (IEC) promotion, observance of World Rabies Day every September 28 and Rabies Awareness Month every March; training of medical providers on treating rabies victims, and establishment of ABTCs in every interlocal health zones [9,13].

In 2018, Region 4-A ranked as having the second-highest cases of human rabies in the Philippines, with 30 reported cases [9]. All human rabies cases reported resulted in death, which makes case rate and mortality rate synonymous. As reported by DOH Region 4-A, there has been a 42% reduction in rabies cases during the first two months of 2023. However, this reduction in rabies cases does not reflect the incidence of animal bites, which continue to pose a risk factor for rabies transmission [14].

Republic Act No. 9482, or The Anti-Rabies Act of 2007, aims to control, prevent, and eventually eradicate human and animal rabies in the Philippines. It established the National Rabies Prevention and Control Program (NRPCP), which promotes responsible pet ownership and requires local government units (LGUs) to conduct dog registration and vaccination, manage stray dogs, and establish dog pounds [15].

Although pre- and post-exposure prophylaxis help prevent human rabies, evidence shows that mass dog vaccination (MDV) is more cost-effective in reducing human rabies exposure [7]. Dog population management and environmental control measures are also instrumental in deterring free-roaming animals from going through human garbage. It demonstrates the One Health approach by controlling canine rabies and reducing human transmission [16].

NRPCP reported in 2015 that vaccine coverage among dogs in Region 4-A was about 38.9%, which is way below the target of 70% coverage. Furthermore, this estimate is based on a calculation of 1 dog to 10 human ratios, which is refuted by other studies showing a higher dog population. Hence, the reported dog vaccination coverage may be an overestimation [17].

The Mandanas-Garcia Ruling mandated the devolution of governmental functions, including the NRPCP, to LGUs in the Philippines [11]. This ruling increased LGUs' share of national taxes by expanding the internal revenue allotment (IRA) base to include Bureau of Customs (BOC) collections and other revenues [18]. This enables LGUs to better address the specific needs of their constituents, considering disparities in local capabilities [19], emphasizing decentralization and local empowerment. However, LGUs show varying technical readiness for devolution [20], and studies report misconceptions and non-compliance to regulations among stakeholders [21,22,23].

The Health Belief Model (HBM) is a key framework in health behavior research [24]. It guides health behavior interventions by considering personal beliefs about a disease and strategies available to decrease its occurrence [25,26]. These beliefs are shaped by unconscious associations formed over time and influenced by the political context that defines the relationship between the individual and the State [24]. The link between these factors and dog owners' intent to vaccinate remains unclear, highlighting the need for further insight into psychological determinants of protective behavior. Rabies elimination in dogs depends on the commitment and collaboration of the stakeholders involved. HBM helps define factors influencing health behaviors, such as perceived benefits, risks, barriers, technological needs, and attitudes toward rabies control. Studies

in Ethiopia [25]; Australia [27]; Indonesia [26,28,29]; Nepal [30]; and the Philippines (Camarines Norte and Sur) [22] identified that socio-demographic, cultural beliefs, bite history, access to healthcare, ownership status of the biting animal, bite severity, monthly spending, information sources, level of knowledge, and political initiative influence health seeking behavior and willingness to participate in One Health collaboration.

This study aimed to determine how pet owners' KAP towards animal bites and rabies prevention and control in Alaminos, Laguna are influenced by their socio-demographic characteristics and pet ownership history within the HBM.

The findings provide evidence-based insights for local government units, public health professionals and veterinary stakeholders to improve information and education campaigns, enforce policies, and enhance community engagement. This also contributes to the knowledge pool on health behavior and zoonotic disease prevention at the grassroots level.

2. Methodology

2.1. Research Design and Study Setting

This study used a quantitative cross-sectional design with an interview-guided questionnaire administered to pet owners in Alaminos, Laguna.

Alaminos is a third-class municipality in Laguna's third congressional district, spanning 5,363 hectares across 15 barangays. According to the 2020 census, it had 51,619 residents and 13,249 households. The local rabies control program is managed by the Municipal Agriculture Office (MAO) and the Rural Health Unit (RHU). The MAO handles animal control and vaccination, while the RHU administers PEP to humans.

The municipality recorded four rabies cases in 2020. Despite this, animal bite cases increased from 406 in 2020 to 624 in 2022 [31].

2.2. Study Population and Sampling Design

The survey was conducted among households of pet owners across the 15 barangays of Alaminos, Laguna. The recruitment of households for

interviews used cluster random sampling based on their barangay residents' listings.

The estimated proportion of pet-owning households in Alaminos, Laguna was derived from Dizon *et al.* (2022), which reported that 54.1% of households in Central Luzon owned dogs [21]. This yielded a sample size of 408 households at a 95% confidence level and 5% margin of error, including a 10% allowance for non-response. The sample per barangay was proportionally weighted based on the number of registered households.

2.3. Inclusion and Exclusion Criteria

Only households currently owning pets (dogs or cats) and having an adult (18 years old and older) available for interview were included in the survey. Persons who were not permanent residents of the household, below 18 years of age, unable to understand the purpose of the study despite explanation, and who did not provide consent were excluded as household informants.

2.4. Development of Data Collection Tool

The questionnaire was developed to follow a HBM approach to explore key constructs that influence health protection behaviors, namely knowledge, perceived threat, perceived benefits, perceived barriers, readiness to action and self-efficacy [25]. The questionnaire was developed based on the contents of the RA 9482 and its IRR [15].

Perceived threats include perceived susceptibility and severity about the risk of exposure to animal bites and rabies, and concerns about the seriousness of the illness. Perceived benefits relate to the outcome that reduces susceptibility or severity. Perceived barriers identify concerns or negative beliefs about the intended protective behavior. Cues to action are strategies or information sources that promote protective behavior adoption. Self-efficacy measures the pet owner's confidence in their ability to adopt the behavior.

The questionnaire collected socio-demographic data, rabies exposure history, and pet vaccination practices. The first section assessed respondents' knowledge of animal bites and rabies prevention. The questions covered human, animal, and environmental aspects of rabies. The second section measured willingness to

comply with interventions. Questions in both sections were answered with “yes,” “no,” and “I don’t know.” The third section covered perceptions and attitudes, while the fourth section focused on practices. The third and fourth sections used a Likert Scale to gauge levels of agreement or disagreement.

Content validation was conducted by a panel of two public health experts. The questionnaire demonstrated excellent relevance (S-CVI/Ave = 1.00; S-CVI/UA = 1.00) and high clarity (S-CVI/Ave = 0.96; S-CVI/UA = 0.96). It was pre-tested among fifty (50) pet owners in Montalban, Rizal to assess its reliability and usability. The instrument showed acceptable internal consistency, with a Cronbach’s alpha of 0.76, indicating good reliability.

2.5. Data Collection

Approval was secured from the Office of the Municipal Mayor followed by coordination with the Association of Barangay Captains (ABC) president and barangay health worker (BHW) president.

A one-day workshop was held in August 2024 to orient data collectors and ensure consistent implementation of the survey methodology. Fifteen (15) barangay health workers and the BHW president attended the training. The trained workers conducted a two-week house-to-house survey, interviewing pet owners using a structured Filipino-translated questionnaire. Each interview lasted approximately 15–30 minutes, with written informed consent obtained before participation.

2.6. Study Variables

Dependent variables included the level of rabies prevention and control knowledge, attitudes, and practices. Independent variables included personal factors such as history of pet ownership, history of exposure to animal bites and rabies, and source of information. Confounding variables include socio-economic demographic factors, such as age, educational status, and economic status, among others.

2.7. Data Analysis

Socio-demographic data were encoded and analyzed using descriptive statistics. For the knowledge questions, one point was assigned for

each correct answer, while zero was given to incorrect and “I don’t know” answers. For perception and practice questions, scores from 1 to 5 were assigned for each option, with 5 being the highest score, indicating positive perception or good practices. Scoring was reversed for items depicting negative perception or poor practice [32].

The KAP scores were categorized using Bloom’s cut-off point with scores above 80% score as being good or positive, between 60%-80% score as fair or ambivalent, and scores below 60% as being poor or negative [33].

Statistical analysis was done using R Software ver. 4.4.1. Response frequencies were analyzed for each item. Aggregate scores were analyzed using non-parametric tests due to the skewness of the data. Kruskal-Wallis test was used to associate the aggregated KAP scores and variables with more than two groups, and Mann-Whitney U test was used to associate the aggregated KAP scores and variables with only two groups; while Fisher’s exact test examined relationships among pet owner characteristics and methods of controlling pet mobility, and pet characteristics and compliance with government program strategies. These nonparametric tests were chosen due to the highly skewed nature of the aggregated scores. Further analysis using Spearman Rank-Order Correlation assessed relationships among KAP scores.

2.8. Ethical Considerations

The research posed minimal risk to the respondents and the community. It was conducted in accordance with the Declaration of Helsinki and the University of the Philippines Code of Research Ethics with reference code UPMREB 2024-0327-EX.

3. Results

A total of 402 respondents representing households owning pets were interviewed using a structured questionnaire (Table 1). The majority of the respondents were 30 to 50 years of age (65.42%), of female gender (64.93%), at least high school level or higher educational attainment (90.05%), earning less than Php 10,000 per household per month (67.16%) and residing in a detached house structure without yard enclosure (60.95%).

Table 1. Socio-demographic characteristics of respondents representing households owning pets in the Municipality of Alaminos, September 2024 (n=402).

Demographic Variable	Count	Percentage
Age group		
19 years old and below	5	1.24
20 to 29 years old	62	15.42
30 to 39 years old	94	23.38
40 to 49 years old	91	22.64
50 to 59 years old	78	19.40
60 years old and above	72	17.91
Sex		
Male	141	35.07
Female	261	64.93
Highest Educational Attainment		
Elementary Level/Graduate	40	9.95
High School Level/Graduate	233	57.96
College Level/Graduate	129	32.09
Employment Status		
Student	11	2.74
Unemployed	149	37.06
Employed	146	36.32
Self-employed	96	23.88
Monthly Household Income		
Less than Php 10,000	270	67.16
Php 10,001 to 20,000	103	25.62
Php 20,001 to 30,000	21	5.22
Php 30,001 to 40,000	3	0.75
More than Php 40,000	5	1.25
Housing Status		
House with enclosed yard	146	36.32
House with no enclosed yard	245	60.95
Apartment	11	2.74

Barangay health workers conducted the survey on weekdays, as reflected in the predominance of female, middle-aged, stay-at-home respondents. Consistent with rural settings, most families lived in detached houses despite household incomes below the poverty threshold set by the Philippine Statistics Authority (PSA) in 2022 [34].

Table 2 presents pet owners' characteristics, including the number of current pets and duration of ownership. The majority had 1 or 2 pets at present (77.36%), and slightly over half (51.99%) owned pets for two years or less. Among the pet owners, only 8.21% always allowed their pets to roam outside the house, and only 18.91% do not restrain their pets when taken outdoors.

Table 2 also shows that a third (32.59%) of pet owner respondents primarily received their information about animal bites and rabies from local government officials, particularly barangay officials and barangay health workers who are ever

present in the community. However, it is also notable that another third (34.33%) relied on social media. Social media has become an integral part of daily life. While it could improve awareness through responsible health promotion, health professionals must remain vigilant in addressing misinformation and strengthening fact-checking mechanisms to ensure accurate online health information [35].

Further analysis of the data found in Tables 1 and 2 showed significant associations between housing status and pet management practices. Housing status was significantly related to the frequency of allowing pets to roam outside ($p=0.005$) and to the total number of pets per household ($p=0.004$). Duration of pet ownership was not significantly associated with the use of cages or leashes inside ($p=0.492$) or outside the house ($p=0.635$), but it was significantly associated with the frequency of allowing pets to roam outdoors ($p=0.037$). These findings indicate that

Table 2. Frequency distribution of characteristics of pet ownership, physical measures on controlling pet movement, and primary source of information pertaining to animal bites and rabies among pet owners in the Municipality of Alaminos, Laguna, September 2024 (n=402).

Description	Frequency	Percentage
Total pets owned		
1	190	47.26
2	121	30.10
3	32	7.96
4	23	5.72
5 or more	36	8.95
Duration of pet ownership		
< 1 year	39	9.70
1 to 2 years	170	42.29
3 to 4 years	71	17.66
5 to 6 years	50	12.44
7 years and above	72	17.91
Frequency of letting the pets roam outside the house		
Always	33	8.21
Often	88	21.89
Sometimes	211	52.49
Never	70	17.41
Ways to control pets inside the house		
Cage	64	15.92
Leash	236	58.71
Free roaming	102	25.37
Ways to control pets outside the house		
Cage	58	14.43
Leash	268	66.67
Free roaming	76	18.91
Primary source of information		
Social media	138	34.33
Government officials	131	32.59
Print and mass media	101	25.13
Private medical practitioners	20	4.98
Friends or relatives	12	2.99

both housing type and ownership experience influence how pet owners manage roaming behaviors and overall pet numbers.

Overall, pet owners showed moderate to strong understanding of general knowledge about animal bites and rabies (Table 3). However, it is notable that there was poor knowledge about livestock being affected by rabies, with only a quarter of the respondents correctly answering the question (26.87%).

On the other hand, a high proportion of respondents correctly identified the symptoms of rabies (Table 4). Interestingly, the negatively phrased item on “frequent thirst” as a symptom yielded the lowest correct response rate (18.16%), while the high accuracy for “tingling at the wound site” (81.84%) suggests respondents gave thoughtful consideration to their answers.

Table 5 indicates that most pet owners expressed positive perceptions toward rabies prevention and control. However, belief in “tandok” as an effective traditional remedy persisted, with only 24.88% of respondents answering correctly by rejecting it. A more concerning misconception was that pets are safe to play with while eating, opposed by only 3.48% of respondents.

For perceived benefits, over 95% agreed on the importance of annual pet vaccination and prompt consultation after animal bites, while 80.10% held positive views on barangay officials’ roles.

For perceived barriers, 66.67% agreed that indoor pets still need vaccination, and 63.68% disagreed that rabies vaccines cause pet deaths. Most respondents (88.89%) supported government

Table 3. Frequency distribution on the respondents in terms of the general knowledge pertaining to animal bites and rabies among pet owners in the Municipality of Alaminos, September 2024 (n=402).

Animal Bites and Rabies Knowledge	Correct Answer	
	Frequency (n)	Percentage (%)
A person can get rabies through a scratch from a rabid animal.	390	97.01
A person bitten by an unvaccinated or stray animal should be brought to the health center within 24 hours.	390	97.01
Environmental sanitation plays an important role in preventing incidence of animal bites.	383	95.27
Mass vaccination of dogs and cats are conducted in our community at least once a year.	374	93.03
Owners who allow their pets to roam the streets without leash should be fined.	368	91.54
Animal bites increase the risk of getting rabies infection.	353	87.81
Rabies infection is treated with antibiotics.	304	75.62
Rabies is caused by a bacterium.	302	75.12
Barangay officials are responsible for killing animals suspected to have rabies.	259	64.43
Livestock such as cows or cattle are not affected by rabies.	108	26.87

Table 4. Frequency distribution of the respondents in terms of their knowledge of symptoms of rabies in the Municipality of Alaminos, September 2024 (n=402).

Symptoms of Rabies	Correct Answer	
	Frequency (n)	Percentage (%)
Drooling of saliva	383	95.27
Aggression	376	93.53
Headache	372	92.54
Fatigue or body weakness	370	92.04
Fever	361	89.80
Tingling sensation in the area of the wound bite	329	81.84
Frequent feeling of thirst	73	18.16

funding for human vaccines, and 81.09% agreed that pet owners should share vaccination costs.

Regarding perceived threats, most respondents recognized risks from stray animals (84.08%), open garbage bins (91.04%), failure to restrain suspected rabid animals (76.86%), allowing pets to lick wounds (65.42%), and ignoring proper bite protocols (71.39%).

Table 6 showed that dogs (76.37%) remained the preferred pets over cats (23.63%). Over half (63.43%) of pets were received as gifts, and guarding the home (21.24%) was the most common reason for ownership.

Among reported pets, only 30.94% were registered with the municipal veterinary office, 39.8% had up-to-date rabies vaccinations, and 12.1% were neutered (Table 7).

To better understand low participation in government rabies prevention programs,

respondents were asked about their reasons. For pet registration (Table 8), nearly half (44.47%) cited being too busy, while another 13.11% were uninterested. About 24.16% were unaware of registration guidelines, and some reported difficulty restraining or transporting pets.

The association between the pet's characteristics (Table 7) and compliance with government animal control strategies (Table 8) was investigated. Analysis shows that both pet species and acquisition method significantly influence registration and vaccination status. Dogs are more likely to be registered ($p=0.0005$) and vaccinated ($p=0.005$) compared to cats. Neutering is not significantly influenced by the type of pet ($p=0.052$) nor its mode of acquisition ($p=0.065$). Pets adopted from streets or shelters are less likely to be registered or vaccinated. Pets purchased from breeders or shops are more often registered, neutered, and vaccinated. Pets received as gifts follow this trend.

Table 5. Frequency distribution of the respondents in terms of the perceived benefit, barrier, and threats in the implementation of the animal bites and rabies program among pet owners in the Municipality of Alaminos, September 2024 (n=402).

Statements Pertaining to Animal Bites and Rabies	Positive Perception*	
	Frequency (n)	Percentage (%)
Perceived Benefit		
An animal bite victim should be brought to the Animal Bite Treatment Center within 24 hours.	384	95.52
Pet owners should have their pets vaccinated against rabies every year.	382	95.02
I should inform barangay officials when there is a dog biting incident.	322	80.10
I believe that our barangay is efficient in controlling stray animals from roaming freely.	298	74.13
**I believe that Tandok is a traditional remedy that is effective in treating animal bites.	100	24.88
Perceived Barrier		
The human anti-rabies vaccine should be funded by the local government unit.	360	88.89
Pet owners should pay for the cost of vaccination against rabies.	326	81.09
**It is not necessary to have pets vaccinated against rabies if they do not go outside and play with other animals.	268	66.67
**I believe that rabies vaccination has caused the death of some pets that received it.	256	63.68
Perceived Threat		
Garbage storage bins should be properly covered and not accessible to stray animals.	366	91.04
All stray dogs/cats that are freely roaming around should be brought to an animal pound or shelter.	338	84.08
**When an animal is suspected of rabies infection, it should immediately be killed.	309	76.86
**When a dog runs amok biting people, the police should be called to shoot down the dog.	287	71.39
I believe that allowing dogs and cats to lick wounds of humans will increase risk of rabies transmission.	263	65.42
**Pets are usually in a good mood while eating and are willing to play.	14	3.48
Note: *A positive perception indicates agreement or strong agreement to desirable belief, or disagreement or strong disagreement to an undesirable belief. **Statement reflects a negative health behavior; hence, coding was reversed accordingly.		

Table 6. Frequency distribution of respondents in terms of pet characteristics in the Municipality of Alaminos, September 2024 (n=711).

Pet Characteristics	Frequency (n)	Percentage (%)
Type of pet		
Dog	543	76.37
Cat	168	23.63
Origin of pet		
Received as gift	451	63.43
Born at home	97	13.64
Bought from breeders/shops	90	12.66
Adopted from streets/shelter	73	10.27
Reason for keeping pet		
Guard	151	21.24
Passion/ Animal lover	136	19.13
Stress reliever/ Emotional support	50	7.03
Companion/ Family member	24	3.38
Mouse catcher	16	2.25
Other reasons	16	2.25
No reason	318	44.73

Overall, only 46.29% were registered. Also, only 13.11% had been neutered. Most concerning is that

only 31.16% had current anti-rabies vaccination. Even among dogs alone, only 33.0% were up-to-

Table 7. Frequency distribution of pet's participation in services of the National Rabies Prevention and Control Program in the Municipality of Alaminos, September 2024 (n=711).

Pet Characteristics	Frequency (n)	Percentage (%)
Registered to the municipal veterinary		
Registered	220	30.94
Not registered	491	69.06
Neutering of pets		
Neutered	86	12.10
Not neutered	625	87.90
Last vaccination status		
Up to date	283	39.80
Not up to date	428	60.20

Table 8. Frequency distribution of reasons for not enlisting their pets to the municipal animal registry among pet owners who responded in the Municipality of Alaminos, September 2024 (n=389).

Reason Why Unregistered	Frequency (n)	Percentage (%)
Too busy	173	44.47
Unaware of guidelines on pet registration	94	24.16
Not interested	51	13.11
Pet is too young/ newly homed	32	8.23
Difficult to restrain or hard to transport pet	26	6.68
Goes to private clinic	13	3.34
Total Responses	389	100.00

date. This contradicts provincial and municipal claims of achieving 70% vaccination coverage.

For non-neutering (Table 9), 21.91% cited lack of familiarity. Many were unaware that pets, especially cats and females, could be neutered. This aligns with the limited neutering capacity at the municipal agriculture office.

For outdated vaccinations (Table 10), 27.65% cited pets being too young, 17.06% reported having difficulty handling aggressive pets, 14.71% faced financial constraints or were waiting free services, and 13.53% missed campaigns due to lack of notice. These were reasons echoed by key informants.

Table 9. Frequency distribution of reasons for not having their pets neutered among pet owners who responded in the Municipality of Alaminos, September 2024 (n=389).

Reason Why Not Neutered	Frequency (n)	Percentage (%)
Unfamiliar with neutering	101	21.91
Too busy	89	19.31
Pet is too young	62	13.45
Afraid it may harm the pet	54	11.71
Unaware of where to avail the service	36	7.81
Pet is for breeding	33	7.16
Not interested	24	5.21
Difficult to restrain/ very aggressive	21	4.56
Financial/ waiting for free service	18	3.90
Pet is always indoors	16	3.47
Other reasons	7	1.52
Total Responses	461	100.00

Table 10. Frequency distribution of reasons for pet not having up-to-date anti-rabies vaccination status among pet owners who responded in the Municipality of Alaminos, September 2024 (n=389).

Reason for Outdated Vaccination Status	Frequency (n)	Percentage (%)
Pet is too young	47	27.65
Difficult to restrain/ very aggressive	29	17.06
Financial/ Waiting for free service	25	14.71
Not informed of vaccination campaign	23	13.53
Not interested/Forgot	14	8.24
Too busy/ Nobody home	12	7.06
Pregnant	9	5.29
Other reasons	11	6.46
Total Responses	170	100.00

Further inquiry revealed a dichotomy in pet owners' practices regarding rabies prevention and control (Table 11). Most respondents reported good

vaccination (85.32%). However, fewer were willing to pay for bite victims' medical expenses (59.20%) or pet vaccination costs (61.44%). Only 63.93%

Table 11. Frequency distribution on the self-efficacy, external cue to action and internal cue to action among pet owners in the implementation of the animal bites and rabies program in the Municipality of Alaminos, September 2024 (n=402).

Practice Statement	Good Practice	
	Frequency (n)	Percentage (%)
Self-efficacy		
I make sure that my pet is clean and well-fed every day.	377	93.78
I make sure that my pet always has a leash when it goes out of the household premises.	350	87.06
I make sure that my pets are vaccinated against rabies every year.	343	85.32
I make sure that children do not disturb my pet when it is eating.	341	84.82
I make sure that stray animals do not go through my garbage storage.	330	82.09
I will call the municipal veterinary office in case an animal is suspected of rabies infection.	257	63.93
I pay for the cost of my pet's vaccination against rabies.	247	61.44
I will pay for the medical expenses of the person bitten by my pet.	238	59.20
External Cue to Action		
I report to barangay officials when there are stray animals roaming near my home.	263	65.42
I always hear about an information dissemination campaign regarding animal bites and rabies going around in our barangay.	247	61.44
I attend training or information campaigns on health and wellness in our community.	185	46.02
**I seek traditional healers to treat animal bites.	163	40.55
Internal Cue to Action		
**I eat dog meat.	389	96.77
**I allow my pet to lick the wound caused by their bite to make them feel sorry.	372	92.54
**I don't need to wash or disinfect animal bites when there is no bleeding.	227	56.47

Note: *A positive perception indicates agreement or strong agreement to a good practice, or disagreement or strong disagreement to a poor practice.
 **Statements reflect a negative health behavior; hence, coding was reversed accordingly.

practices such as proper pet care (93.78%), controlling pets' outdoors (87.06%), preventing stray access to garbage (82.09%), keeping children away while pets eat (84.82%), and ensuring annual

knew that the municipal veterinary office handles suspected rabid animals.

Few respondents showed “external cues to action.” Only 40.55% avoided traditional healers, 65.42% reported strays to barangay officials, 61.44% regularly heard information campaigns, and 46.02% attended health trainings. Despite limited exposure to education campaigns, most respondents practiced safe behaviors, such as avoiding dog meat consumption (96.77%) and preventing pets from licking bite wounds (92.54%). The question about not washing non-bleeding wounds may have been unclear, since only 56.47% of respondents answered it correctly.

Subsequent analysis examined the relationship between pet owners’ KAPs and influencing factors. The KAP responses were aggregated into numerical scores for correlation analysis [36]. Table 12 shows a decline from high knowledge to fair attitudes and poor practices among pet owners based on Bloom’s cut-off point [33].

significant relationship between knowledge and practice.

Table 14 shows that 46.27% of respondents knew a household member, and 62.94% knew a neighbor, who had been bitten or scratched by animals. Only two respondents (0.5%) knew a household member, and four (1.0%) knew a neighbor who had contracted rabies. Since no time frame was specified, these may refer to past cases.

Tables 15 to 18 show that pet owners with household exposure to animal bites or rabies had significantly higher KAP scores. Awareness of neighbors with bites or rabies showed no significant effect on knowledge but did significantly influence attitudes and practices.

Table 19 shows that most residents in apartment-type houses have 2 or fewer pets (90.9%). In households without enclosures, 83.3%

Table 12. Descriptive statistics of knowledge, attitudes, and practices (KAP) scores on animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402).

KAP on Animal Bites and Rabies	Mean	SD
Knowledge	83.36	11.14
General knowledge	85.00	11.78
Symptoms of rabies	81.02	18.03
Attitudes	72.40	11.27
Perceived benefits	74.96	13.34
Perceived barriers	76.31	17.67
Perceived threats	67.67	13.22
Practice	53.01	11.07
Self-efficacy	60.45	11.11
External cues to action	60.18	23.38
Internal cues to action	23.61	14.66

Using Spearman Rank-Order correlation analysis, Table 13 reveals a statistically significant positive monotonic correlation between respondents' knowledge and attitudes, and attitudes and practices. However, there is no

have 1 to 2 pets, 11.0% have 3 to 4 pets, and only 1.6% have 6 or more pets. In contrast, households with yard enclosures tend to have more pets, with 66.4% having 1 to 2 pets, 19.2% having 3 to 4 pets, and 6.8% having 6 or more pets.

Table 13. Spearman rank-order correlation analysis between knowledge, attitudes, and practices (KAP) towards animal bites and rabies in the Municipality of Alaminos, September 2024 (p<0.05).

Variables	rho	p-value
Knowledge - Attitudes	0.3128	< 0.001*
Knowledge - Practices	0.0647	0.1950
Attitudes - Practices	0.4021	< 0.001*

Table 14. Frequency distribution of exposure to animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402).

Experience with Animal Bites and Rabies	Count	Percentage
Has a household member been bitten or scratched by an animal?		
Yes	186	46.27
No	182	45.27
Don't know	34	8.46
Has a neighbor been bitten or scratched by an animal?		
Yes	253	62.94
No	68	16.92
Don't know	81	20.15
Has a member of the household contracted rabies?		
Yes	2	0.50
No	344	85.57
Don't know	56	13.93
Has a neighbor contracted rabies?		
Yes	4	1.00
No	327	81.34
Don't know	71	17.66

Table 15. Summary of the relationship between exposure of pet owners and their overall knowledge, attitudes, and practices regarding animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Experience with Animal Bites and Rabies	Overall Knowledge		Overall Attitudes		Overall Practices	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
HH member bitten or scratched by an animal	0.002	Significant	0.000	Significant	0.006	Significant
Neighbor bitten or scratched by an animal	0.114	Not Significant	0.001	Significant	0.002	Significant
HH member contracted rabies	0.002	Significant	0.000	Significant	0.008	Significant
Neighbor contracted rabies	0.114	Not Significant	0.001	Significant	0.002	Significant

Table 16. Summary of the relationship between exposure of pet owners and their general knowledge about and symptoms of animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Experience with Animal Bites and Rabies	General Knowledge		Symptoms of Rabies	
	p-value	Interpretation	p-value	Interpretation
HH member bitten or scratched by an animal	0.000	Significant	0.000	Significant
Neighbor bitten or scratched by an animal	0.068	Not Significant	0.000	Significant
HH member contracted rabies	0.000	Significant	0.000	Significant
Neighbor contracted rabies	0.068	Not Significant	0.000	Significant

Table 17. Summary of the relationship between exposure of pet owners and their attitudes toward animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Experience with Animal Bites and Rabies	Perceived Benefits		Perceived Barriers		Perceived Threats	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
HH member bitten or scratched by an animal	0.007	Significant	0.001	Significant	0.148	Not Significant
Neighbor bitten or scratched by an animal	0.057	Not Significant	0.000	Significant	0.206	Not Significant
HH member contracted rabies	0.007	Significant	0.001	Significant	0.148	Not Significant
Neighbor contracted rabies	0.057	Not Significant	0.000	Significant	0.206	Not Significant

As shown in Table 20, there was a statistically significant relationship between the duration of

pet ownership and the frequency of allowing pets to roam outside (p=0.037). Across all ownership

Table 18. Summary of the relationship between exposure of pet owners and their practices regarding animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Experience with Animal Bites and Rabies	Self-efficacy		External Cue to Action		Internal Cue to Action	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
HH member bitten or scratched by an animal	0.022	Significant	0.005	Significant	0.005	Significant
Neighbor bitten or scratched by an animal	0.004	Significant	0.002	Significant	0.008	Significant
HH member contracted rabies	0.022	Significant	0.005	Significant	0.005	Significant
Neighbor contracted rabies	0.004	Significant	0.002	Significant	0.008	Significant

Table 19. Association between housing status and total number of pets owned per household in the Municipality of Alaminos, September 2024 (n=402).

Total Pets	Housing Status			p-value
	House with enclosed yard	House with no enclosed yard	Apartment	
1	51 (34.9%)	133 (54.3%)	6 (54.5%)	0.004
2	46 (31.5%)	71 (29.0%)	4 (36.4%)	
3	14 (9.6%)	18 (7.3%)	0 (0.0%)	
4	14 (9.6%)	9 (3.7%)	0 (0.0%)	
5	11 (7.5%)	10 (4.1%)	1 (9.1%)	
6 or more	10 (6.8%)	4 (1.6%)	0 (0.0%)	

Table 20. Relationship between duration of pet ownership and frequency of allowing pets to roam outside in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Duration of Pet Ownership	Frequency of letting the pets roam around				Overall	p-value
	Always	Often	Sometimes	Never		
Less than 1 year	2 (5.1%)	10 (25.6%)	22 (56.4%)	5 (12.8%)	39 (9.7%)	0.037
1 to 2 years	15 (8.8%)	50 (29.4%)	87 (51.2%)	18 (10.6%)	170 (42.3%)	
3 to 4 years	6 (8.5%)	12 (16.9%)	39 (54.9%)	14 (19.7%)	71 (17.7%)	
5 to 6 years	5 (10.0%)	6 (12.0%)	26 (52.0%)	13 (26.0%)	50 (12.4%)	
7 to 8 years	2 (6.5%)	7 (22.6%)	14 (45.2%)	8 (25.8%)	31 (7.7%)	
9 years and above	3 (7.3%)	3 (7.3%)	23 (56.1%)	12 (29.3%)	41 (10.2%)	

durations, “sometimes” allowing pets to roam was the most common practice, while longer durations of pet ownership were associated with a higher proportion of respondents who never allowed their pets to roam. In contrast, households with shorter pet ownership duration more frequently reported allowing pets to roam often. These findings suggest

that increased experience in pet ownership may be associated with more responsible and restrictive pet management practices.

Overall, the primary source of information was found to impact the respondent’s knowledge, attitudes, and practices (Table 21). Other

Table 21. Summary of the relationship between different sociodemographic factors of pet owners and their overall knowledge, attitudes, and practices regarding animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Sociodemographic Factors	Overall Knowledge		Overall Attitudes		Overall Practices	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
Age	0.004	Significant	0.309	Not significant	0.075	Not significant
Sex	0.045	Significant	0.323	Not significant	0.733	Not significant
Educational attainment	0.093	Not significant	0.136	Not significant	0.504	Not significant
Employment status	0.010	Significant	0.096	Not significant	0.123	Not significant
Monthly income	0.067	Not significant	0.036	Significant	0.015	Significant
Primary source of information	0.470	Significant	0.000	Significant	0.029	Significant

determinants of overall knowledge include age, sex, and employment status. Apart from the information source, only the monthly income is shown to influence overall attitude and practice.

Breaking down the components of knowledge, attitudes, and practices among pet owners shows that general knowledge about animal bites and rabies was significantly influenced by age, sex, education, employment, and the main source of information. Meanwhile, knowledge of rabies symptoms was significantly influenced by age, employment status, and primary source of information (Table 22).

External cues to action, which reflect exposure to government information or training, were affected only by the primary information source. Internal cues to action, which are actions shaped by personal or observed experiences, were linked solely to educational attainment (Table 24).

Discussion

The survey was conducted during weekdays, and this timing is reflected in the respondents' profile, which consisted mostly of middle-aged women who were typically housewives and at home during the day. Typical of a rural

Table 22. Summary of the relationship between various sociodemographic factors of pet owners and their knowledge about animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Sociodemographic Factors	General Knowledge		Symptoms of Rabies	
	p-value	Interpretation	p-value	Interpretation
Age	0.007	Significant	0.003	Significant
Sex	0.026	Significant	0.821	Not significant
Educational attainment	0.033	Significant	0.708	Not significant
Employment status	0.024	Significant	0.004	Significant
Monthly income	0.152	Not significant	0.559	Not significant
Primary source of information	0.000	Significant	0.001	Significant

Perceived benefits, which are beliefs that reduce susceptibility to animal bites or rabies, were influenced by education, income, and information source. Perceived barriers, referring to negative beliefs or concerns about preventive behavior, were affected solely by the primary information source. Perceived threats, which are statements that heighten perceived risk, were influenced by employment, income, and information source (Table 23).

community, most families live in a detached home structure despite having a household income below the poverty threshold set by the Philippine Statistics Authority (PSA) in 2022 [34].

The sentiments of the government key informants interviewed regarding the lack of control of pet movement in the community were contradicted by the majority of pet owners surveyed. According to the pet owners, there was a

Table 23. Summary of the relationship between different sociodemographic factors of pet owners and their attitudes toward animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Sociodemographic Factors	Perceived Benefits		Perceived Barriers		Perceived Threats	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
Age	0.855	Not significant	0.423	Not significant	0.302	Not significant
Sex	0.632	Not significant	0.406	Not significant	0.503	Not significant
Educational attainment	0.016	Significant	0.094	Not significant	0.075	Not significant
Employment status	0.054	Not significant	0.519	Not significant	0.020	Significant
Monthly income	0.039	Significant	0.324	Not significant	0.026	Significant
Primary source of information	0.000	Significant	0.036	Significant	0.004	Significant

Self-efficacy statements gauging preventive and control practices were influenced by respondents' income and information source.

low proportion among them who allowed their pets to roam outside the house and who neglected to restrain their pets when outside of the house.

Table 24. Summary of the relationship between various sociodemographic factors of pet owners and their practices regarding animal bites and rabies in the Municipality of Alaminos, September 2024 (n=402, p<0.05).

Sociodemographic Factors	Self-efficacy		External Cue to Action		Internal Cue to Action	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
Age	0.392	Not significant	0.062	Not significant	0.432	Not significant
Sex	0.124	Not significant	0.564	Not significant	0.096	Not significant
Educational attainment	0.189	Not significant	0.793	Not significant	0.029	Significant
Employment status	0.279	Not significant	0.120	Not significant	0.806	Not significant
Monthly income	0.001	Significant	0.214	Not significant	0.490	Not significant
Primary source of information	0.002	Significant	0.002	Significant	0.409	Not significant

Nonetheless, the problem of stray animals mostly concerns those that are not adopted by anyone. Responsible pet ownership is important in the success of the program, but it may not be the core reason.

Although it is essential to manage pets' movement to prevent accidental harm to humans, Overgaaw *et al.* (2020) pointed out that pets can develop abnormal behaviors, such as excessive aggression, fear, and anxiety, when exposed to an environment with low stimuli and restricted space [37]. A balance is needed to safeguard both the pet's health and well-being and ensure humans remain protected from unnecessary harm.

Considering that a third of the pet owners mentioned that they received their information about animal bites and rabies from local government officials, particularly from the barangay officials and barangay health workers who are always present in the community, this provides a validation of the government stakeholders' response regarding their roles and responsibilities in the implementation of the program. However, another third of the pet owners mentioned that their source of information comes from social media. Social media has become an integral part of daily life. It is shown to help improve awareness through responsible health promotion; however, health professionals should be vigilant in mitigating the impact of misinformation and should enhance fact-checking to ensure accurate online health information [35].

Knowledge alone often fails to produce protective behavior because people need confidence, social incentives, and clear triggers to act. Self-efficacy and perceived ability to perform preventive steps are critical determinants of

whether knowledge becomes practice; interventions that raise confidence and simplify actions close the gap. Empirical KAP studies of rabies and other zoonoses confirm that knowledge-practice gaps are common, driven by low perceived control, competing daily priorities, and weak motivational cues [39,25,40].

These findings show how specific HBM constructs shaped pet owners' behavior. For instance, high knowledge did not translate to practice because perceived susceptibility to rabies remained low, and many pet owners underestimated the consequences of delayed vaccination despite understanding disease severity [13,21,3].

Most of the pets owned by the respondents were dogs and were acquired through receiving them as gifts. This demographic aligns with other Philippine studies showing that dogs are the most commonly owned pets [17] and that more pets are acquired by receiving them as a gift from someone [38].

Overall, pet owners show a strong to moderate understanding of general knowledge about animal bites and rabies, and the symptoms of rabies. There was also a positive perception towards preventing and controlling animal bites and rabies in alignment with the recommendations of the health experts; however, there is still the persistence of belief in "tandok" as an effective traditional remedy for treating animal bites.

The low proportion of pets registered with the municipal veterinary office, having up-to-date anti-rabies vaccination status, and being neutered, reported by the pet owners are congruent with previous studies showing that using 1 dog per 10

people for the standard estimation of dog population undercounts the local dog population by 2 to 3 times. Evidence-based planning for household surveys and tracking vaccination history can increase data accuracy and simplify data compilation [17,29,38].

The low percentage of respondents agreeing or strongly agreeing to statements demonstrating “external cue to action” is a warning sign that there remains a gap in information and education dissemination pertaining to animal bites and rabies. Local government actors (barangay officials, barangay health workers) are highly trusted community messengers and therefore influential for knowledge uptake, but message accuracy and consistent framing must be ensured through training and standardized materials. Social media reaches large audiences quickly and can boost awareness, yet it also magnifies misinformation unless messages are verified, framed clearly, and routed through credible channels [24,35,21].

The weak “cues to action” observed, especially the low proportion of respondents receiving reminders or community prompts, support the model’s prediction that individuals rarely act without timely triggers, even when they possess correct information [7,9,14,23,24].

Individuals who do not perceive themselves as vulnerable to a health issue are less likely to adopt recommended preventive behaviors. Furthermore, an individual’s belief in their ability to successfully perform a task influence whether they will engage in health-promoting actions, follow health policies, and adopt recommendations [39]. The weak enforcement of health strategies can result from a combination of an individual's perception about the severity of the problem, the benefits of the strategy, and their ability to overcome barriers. Proper education and support systems are critical in overcoming these barriers.

This study demonstrated multiple sociodemographic and experiential factors influencing the knowledge, attitudes, and practices of pet owners regarding animal bites and rabies.

Sociodemographic factors are often shown to influence health beliefs and health-seeking behaviors [25]. Other factors that affect

respondents’ overall knowledge include age, sex, and employment status. In addition to the source of information, only monthly income is shown to influence overall attitude and practice.

The downward trend from the high level of overall knowledge to the fair level of overall attitude, and further downward to a poor practice among pet owners regarding animal bites and rabies according to Bloom’s cut-off point is congruent with the results of similar studies in Los Baños, Laguna [23], and the pre-implementation results of a project conducted in Bicol province [7]. The trend is similar to findings from Bangladesh [40], although all parameters in the Bangladesh study were more concerning.

Upon examining the relationship between knowledge, attitudes, and practices using Spearman Rank-Order correlation analysis, a statistically significant positive monotonic correlation is found between the respondents’ knowledge and attitudes, as well as between attitudes and practices. However, there is no significant relationship between knowledge and practice. Knowledge-practice gaps can persist despite high knowledge levels, as social norms, low perceived efficacy, and lack of motivational triggers prevent translation into consistent preventive behaviors [39,25,40].

The positive correlation between attitudes and practices also supports the HBM principle that attitudes shaped by perceived benefits and severity are stronger predictors of behavior than knowledge alone. This helps explain why improving attitudes may influence actions more effectively than simply providing information [21,23,39,40].

Another factor relevant to the health seeking behaviors among individuals is previous experiences with an event or disease, as shown when a household member was bitten, scratched, or infected with rabies. This is most evident with the respondent’s knowledge about rabies symptoms and practices, although there are blurred relationships when it comes to their perception of animal bites and rabies. The evidence yielded is congruent with the HBM, further validating the latter as a guiding framework for health behavior [24].

The influence of bite exposure history on higher knowledge and practice also supports the HBM concept that direct experience heightens perceived susceptibility and severity, thereby triggering more protective actions [17,21,25,40].

The association of factors with the knowledge, attitudes, and practices agrees with findings in the studies conducted in the Asia-Pacific and Africa [7,25,26,27,28,29,30]. These studies revealed that socio-demographic factors, cultural beliefs, history of bites, distance from the nearest health center, ownership status of the biting animal, monthly spending, sources of information, level of knowledge, and political initiative are influential in the health-seeking behavior of individuals and willingness to participate in the One Health approach collaboration.

Low turnout for campaigns often reflects top-down delivery and limited community ownership. Participatory communication approaches, including peer learning, barangay-based advocacy champions, and community co-design of campaign timing and locations, increase relevance and uptake by aligning activities with local routines and social norms. Case studies of One Health and grassroots rabies programs show better coverage when communities lead planning and monitoring [22,27,16].

Beyene *et al.* (2018) also found an inverse relationship between education level and willingness to vaccinate [25]. This is echoed by the responses of most pet owners, who cited being too busy or lacking the time to bring their pets for vaccination, indicating a lack of perceived benefit.

Effective rabies control requires coordinated communication across animal health, public health, and community sectors, using shared, pre-tested core messages, synchronized campaign calendars, and feedback loops that allow communities to report gaps and officials to respond. Integrated bite-case management and One Health forums show that routine data-sharing and joint messaging improve timeliness and build community trust. Simple feedback systems, such as hotlines or barangay focal persons, and coordinated press materials help ensure consistent, actionable advice [8,16,22].

The responses from pet owners suggest a significant gap between knowledge, attitudes, and

practices. Despite having a high level of knowledge, this understanding has not yet led to a change in the health belief of pet owners.

4. Conclusion and Recommendation

The study revealed that while pet owners in the Municipality of Alaminos, Laguna generally possess high levels of knowledge about animal bites and rabies, this cognitive understanding does not consistently translate into positive attitudes and responsible practices. Sociodemographic factors such as age, employment status, primary source of information and history of exposure significantly influenced their knowledge, attitudes, and practices. There is a notable discrepancy between the official anti-rabies vaccination coverage reported by government agencies and the actual data obtained from surveyed pet owners, highlighting the need for improved strategies to estimate pet populations accurately and achieve herd immunity. The outdated municipal resolution on rabies prevention also warrants immediate review and revision to reflect current national strategies, including the integration of the One Health approach. Strengthening the implementation of rabies prevention programs requires more accurate animal surveillance, coordinated information and education campaigns across sectors, and capacity building of local personnel through proper training and adequate staffing.

Taken together, the findings affirm key principles of the Health Belief Model, showing that low perceived susceptibility, weak cues to action, and persistent perceived barriers continue to hinder the translation of knowledge into practice. Enhancing perceived benefits, strengthening self-efficacy, and ensuring timely reminders and supportive community structures are therefore essential to shift pet owners from awareness to consistent preventive behavior.

Behavior change communication strategies should focus on emotional and social motivators, such as protecting children, family, and the community. They should simplify actions into clear, easy-to-follow steps for pet vaccination and bite wound care. Strategies should also build trust in veterinary services by providing transparent schedules and showing visible results, ensuring that the community understands and feels confident in the recommended practices. Messages

should be repeated through multiple channels including barangay talks, posters, and social media, and tested for clarity before rollout. Practical skill building, incentives, and community participation such as peer learning and barangay advocacy champions should be combined with shared messaging across One Health sectors to improve adoption and compliance. Monitoring and adapting messages through community feedback systems will help identify gaps and make interventions culturally relevant, actionable, and trusted. These measures will ultimately reduce rabies transmission and improve the health of both humans and animals in the community.

Availability of Data and Materials

Included as part of the submitted paper.

Author Contributions

Conceptualization, R.R.R. and E.R.G.; Methodology, R.R.R. and E.R.G.; Validation, R.R.R. and E.R.G.; Formal analysis, R.R.R.; Investigation, R.R.R.; Resources, R.R.R.; Data curation R.R.R.; Writing – original draft, R.R.R.; R.R.R.; Writing – review and editing, RRR and ERG; Visualization, R.R.R.; Supervision, E.R.G.; Project administration R.R.R.; Funding acquisition, R.R.R.

Ethics Approval and Consent to Participate

The research posed minimal risk to the respondents and the community. It was conducted in accordance with the Declaration of Helsinki, and the University of the Philippines Code of Research Ethics with reference code UPMREB 2024-0327-EX.

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Conflict of Interest

The authors declare no conflict of interest.

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