

Final Report: Status of Rabies in Kavrepalanchowk

Submitted to:

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Dhulikhel, Kavrepalanchowk
Bagmati Province, Nepal**

Submitted by:

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Contents

Acknowledgement	1
1. Introduction.....	3
1.1 Specific Objectives	3
2. Approaches to Study	5
2.1 Meeting Ethical Standards	5
2.2 SWOT Analysis.....	5
2.3 Appreciative Inquiry (AI)	5
2.4 Participatory Approach	6
2.5 Methodological approach	6
2.5.1 Quantitative Methods.....	7
2.5.2 Qualitative Methods.....	7
2.6 Study Site and Duration	8
2.7 Preparation and Desk Study	10
2.8 Data Collection	11
2.8.1 Primary Data	11
2.8.2 Secondary Data	11
2.8.3 Data Analysis.....	12
3. Results and Discussion	13
3.1 SWOT Analysis.....	20
4. Recommendations	22
5. Summary and Conclusion:.....	24
6. References	25
Annexes	26
Annex 1: रेबिज रोगबारे बुझाई	26
Annex 2: Proposal.....	28

1. Introduction

Rabies, a zoonotic disease with a nearly 100% fatality rate once clinical symptoms appear, remains a pressing public health challenge worldwide. Despite being preventable through effective vaccination and timely post-exposure prophylaxis (PEP), rabies continues to claim thousands of lives annually, particularly in resource-limited settings. In Nepal, where the interaction between humans, domestic animals, and wildlife is frequent, understanding the dynamics of rabies transmission and control is crucial for effective intervention.

Especially in districts like Kavrepalanchowk where human-animal interaction is frequent and multifaceted. This fatal yet preventable disease disproportionately affects underserved populations, highlighting critical gaps in surveillance, prevention, and public awareness.

Despite Nepal's commitment to the 2024–2030 Rabies Elimination Plan, effective rabies control in Kavrepalanchowk requires a deeper understanding of epidemiological trends, systemic challenges, and community behaviors. This research seeks to illuminate key dimensions of rabies in Kavrepalanchowk by addressing the following objectives:

1.1 Specific Objectives

This research aims to provide a comprehensive analysis of the rabies situation in Nepal by focusing on the following key objectives:

To analyze the incidence, prevalence, and geographical distribution of rabies cases in both human and animal populations, identifying hotspots and temporal patterns.

To evaluate the functionality, coverage, and data quality of rabies monitoring systems, with emphasis on coordination across sectors and reporting accuracy.

To assess the reach and effectiveness of current control strategies, including mass dog vaccination campaigns and availability of post-exposure prophylaxis (PEP).

To explore public perceptions, traditional beliefs, and behavioral responses related to rabies prevention and treatment, illuminating gaps between biomedical recommendations and local realities.

To identify alignment or dissonance between national strategies and local implementation, including budgeting, multisectoral coordination, and stakeholder engagement.

By integrating these strands, the study aims to support evidence-based planning, enhance intersectoral collaboration, and empower communities in Kavrepalanchowk in the collective pursuit of zero rabies deaths.

2. Approaches to Study

We proposed following procedures to carry out the study to ensure high quality study report, making the difference.

2.1 Meeting Ethical Standards

To carry out our research responsibly and ethically, we followed the ethical and professional conduct set by the Nepal Veterinary Council (NVC) and the Nepal Health Research Council (NHRC), by keeping animal welfare, human welfare and transparency as our guiding principals.

2.2 SWOT Analysis

A SWOT analysis is a tool used to look at a situation from four angles:

- S = Strengths → What are we doing well? What advantages do we have?
- W = Weaknesses → What are our gaps or problems?
- O = Opportunities → What chances do we have to improve or grow?
- T = Threats → What risks or obstacles might get in our way?

This will allow decision-makers to fine-tune strategies, better use limited resources, and anticipate challenges before they derail progress.

2.3 Appreciative Inquiry (AI)

“AI values goods and services rather than bads and problems.” One of the most important aspects of AI is the phrasing of the questions- what has worked well? What has contributed to things working well? What has been accomplished? Using this approach, we have

emphasized what has worked well and at the same time pointing to areas where changes are needed.

2.4 Participatory Approach

We have used participatory methods in the data collection process to maximize the involvement and ownership of the stakeholders working in this sector or individuals with lived experience. For qualitative data collection, we used semi structured interview guide with relevant stakeholders and key informants to generate information based on ToR.

2.5 Methodological approach

To comprehensively assess the rabies situation in Kavrepalanchowk, this study has adopted a convergent mixed-methods design, integrating quantitative and qualitative data to triangulate findings across sectors and communities.

Method	Description	Purpose
Retrospective Data Review	Collect and analyze rabies case records (human and animal) from hospitals, veterinary clinics, and surveillance databases over the past 5–10 years.	Establish scope, distribution, and measurable outcomes of rabies-related indicators.
GIS Mapping & Trend Analysis	Visualize geographic hotspots and temporal patterns of rabies outbreaks using spatial data tools.	Identify epidemiological patterns and inform targeted interventions.
Facility-Based Surveys	Assess dog vaccination coverage, PEP availability, and service utilization at health centers and veterinary institutions.	Evaluate effectiveness and reach of rabies control measures.
Key Informant Interviews (KIIs)	Conduct interviews with health workers, veterinarians, local leaders, and policy stakeholders to assess program implementation and coordination.	Understand institutional challenges and stakeholder perspectives.

Survey	Engaged diverse members of the community to explore knowledge, attitudes, beliefs, and traditional responses to rabies and animal bites.	Illuminate sociocultural dynamics and community practices.
Field Observations	Document community practices, stray animal populations, and interactions at vaccination camps or bite treatment centers.	Provide contextual insights into rabies prevention and treatment behaviors.
Triangulation & Integration	Analyze quantitative and qualitative findings in parallel, then synthesize to identify overlaps and gaps in data reporting and field realities.	Validate risk perceptions and behavioral trends against case statistics.

2.5.1 Quantitative Methods

These have helped establish the scope, distribution, and measurable outcomes of rabies-related indicators.

Retrospective Data Review: Collected and analyzed rabies case records (human and animal) from hospitals, veterinary clinics, and surveillance databases over the past 5–10 years.

GIS Mapping & Trend Analysis: Visualize geographic hotspots and temporal patterns of rabies outbreaks using spatial data tools.

Facility-Based Surveys: Assess dog vaccination coverage, PEP availability, and service utilization at health centers and veterinary institutions.

2.5.2 Qualitative Methods

These have illuminated sociocultural dynamics, institutional challenges, and community perspectives.

Key Informant Interviews (KIIs): Conduct interviews with health workers, veterinarians, local leaders, and policy stakeholders to assess program implementation and coordination.

Surveys: Engaged diverse members of the community to explore knowledge, attitudes, beliefs, and traditional responses to rabies and animal bites.

Field Observations: Document community practices, stray animal populations, and interactions at vaccination camps or bite treatment centers.

Triangulation & Integration:

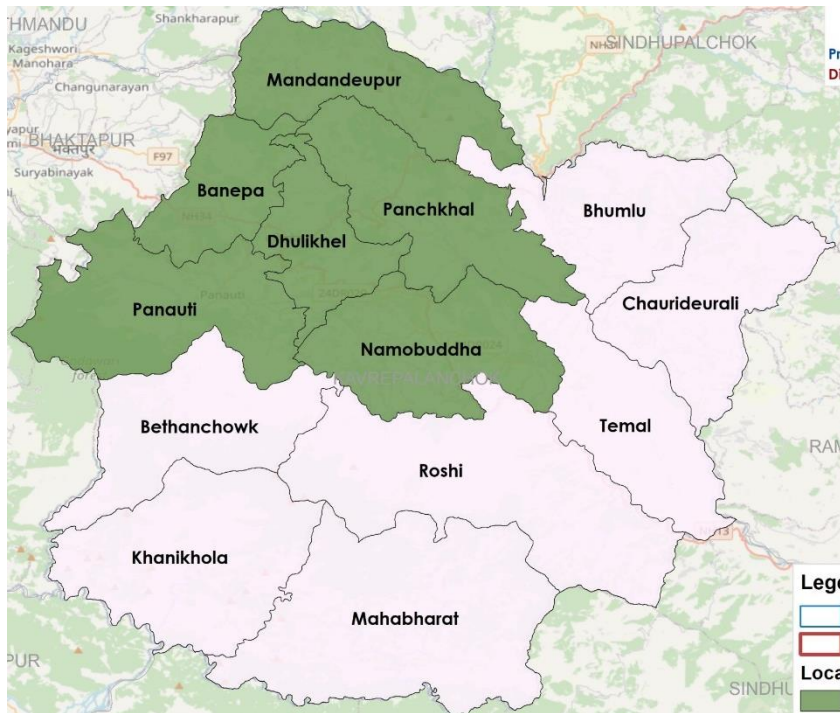
Quantitative and qualitative findings have been analyzed in parallel, and synthesized to:
Identify overlaps and gaps in data reporting and field realities

Validate risk perceptions and behavioral trends against case statistics

Inform actionable recommendations tailored to the Kavre context

2.6 Study Site and Duration

This study was carried out in Kavrepalanchok District, located in Bagmati Province of central Nepal, spans approximately 1,396 square kilometers and comprises 13 municipalities (6 urban and 7 rural). Key urban centers include Dhulikhel (district headquarters), Banepa, Panauti, and Namobuddha. The district features a mix of urbanizing zones and rural settlements, with significant human-animal interaction across agricultural, residential, and forested areas.



Dog Population and Animal Health Context

- The district has a high density of free-roaming dogs, particularly in urban centers like Banepa, Dhulikhel, and Panauti.
- Stray dog management is a public health priority due to risks of rabies transmission, aggressive behavior, and environmental stress.

Dog Population & Rabies Risk

- Estimated high density of free-roaming dogs, especially in Banepa, Dhulikhel, and Panauti
- 900 dogs neutered and 500 vaccinated against rabies in Banepa Municipality alone (2021–2023)
- 80% of Nepal’s dog population is ownerless, increasing due to abandonment and lack of sterilization

Rabies Surveillance & Vaccination

- Rabies Vaccine Production Laboratory (RVPL) produces cell culture-based vaccines for animals and humans
- 51,180 vials of rabies vaccine distributed nationwide in 2025; 10,080 vials allocated to Bagmati Province (includes Kavre)
- PEP availability at District Health Office in Dhulikhel; coverage in rural areas remains limited

Health Facilities

District Health Office – Kavrepalanchok (located in Dhulikhel) oversees human health services, including rabies post-exposure prophylaxis (PEP) availability.

Veterinary services are provided through livestock service office, municipal veterinary units and mobile clinics, though coverage in rural areas remains limited.

Spay/neuter and vaccination camps are periodically organized in collaboration with NGOs and local governments.

NGOs and Animal Welfare Initiatives

Nepal Animal Welfare and Research Center (NAWRC) is a leading NGO based in Banepa, actively working in 10 of the rural and urban municipalities including Banepa, Dhulikhel, and Panauti.

Programs include spay/neuter campaigns, anti-rabies vaccination, rescue and treatment of injured animals, and community education.

NAWRC also supports abandoned calves, wildlife conflict mitigation, and post-disaster animal care.

OIPA Nepal, in partnership with NAWRC, contributes to stray dog population control, rabies prevention, and public awareness.

2.7 Preparation and Desk Study

At the very beginning of this assignment, the consultant engaged in preparation and desk study of available documents, literatures and progress reports of institution related to rabies studies. Those documents were relevant and helpful in generating ideas and secondary information on status of rabies nationally and specifically in Kavre district.

Consultative Meetings with Stakeholders

Preparation and desk study was followed by the consultative meetings with the stakeholders to discuss on the status of rabies disease. Following institutions, organizations and stakeholders were met during the study period:

Epidemiology and Disease Control Division (EDCD), Teku

Department of Animal Services (DLS), Hariharbhawan

Dhulikhel Hospital (DH), Kavre

District Health Office (DHO), Kavre

Local people from Bethanchok, Dhulikhel and Banepa

2.8 Data Collection

Both primary and secondary data related to rabies status were collected from 13 level local bodies of Kavre district and associated institutions. Primary data such as local awareness about rabies, dog bite incidence, and demography of dogs were collected based on field visits. Besides, secondary information related incidence of rabies, districtwise distribution and seasonality were collected through rigorous review of available reports, reviews and related literatures.

2.8.1 Primary Data

Participatory Assessment and Surveys

The study conducted 8 surveys for the collection of information on local level awareness about rabies. A questionnaire with both closed and opened ended questions were used as a guide.

Key informant interview (KII)

The key informants during the survey and participatory assessment were primarily the Chief of epidemiological department, EDCD, DHO and veterinary heads of local municipalities.

2.8.2 Secondary Data

The Consultant visited and consulted with several government and community based organization and took the information compiled by epidemiology department, EDCD, hospital and District health office. Besides, "Progress report" published by the Central Veterinary Lab were also reviewed to gather qualitative and quantitative analysis data/information for preparing the report. Other methods of collecting information were web browsing. The desk study also collected facts and figures from the published documents of the concern organizations.

2.8.3 Data Analysis

Data collection followed by entry using excel-sheets for further cleaning and analyses qualitatively and quantitatively. Consultant experienced some limitation in data analysis because it was observed that most of local level offices, almost at all levels do not keep records of their dog bites or report possible rabies case. However, the Consultant managed to get a fair representation of information across all areas of interest.

3. Results and Discussion

Table 1: Rabies Incidents in Kavre (2018–2025)

Year →	Dhulikhel	Banepa	Panauti	Roshi	MandanDeupur
2018	■ 2	○ 0	○ 0	○ 0	○ 0
2019	■ 1	■ 1	○ 0	○ 0	○ 0
2020	■ 3	■ 8	■ 1	○ 0	○ 0
2021	■ 2	■ 6	○ 0	○ 0	○ 0
2022	○ 0	○ 0	○ 0	○ 0	○ 0
2023	○ 0	■ 2	○ 0	○ 0	○ 0
2024	■ 6	■ 6	■ 1	■ 1	○ 0
2025	■ 2	■ 3	■ 1	○ 0	■ 1

Source: NAWRC (2018-2025)

Color Legend

- ○ **0 cases** – No reported incidents
- ■ **1–2 cases** – Low incidence
- ■ **3+ cases** – High incidence
- The above table demonstrates that
 - Banepa and Dhulikhel are hotspots in 2020 and 2024.
 - Panauti and Roshi show sporadic emergence—potential sentinel sites?
 - MandanDeupur enters the scene in 2025—new surveillance needed?

Table 2: Rabies Trends Over Time (2018–2025)

Year	Total Incidents Logged	Notable Human Fatalities
2018	2	0
2019	2	0
2020	11	0
2021	8	0
2023	2	0
2024	13	1 (Dec 2024)
2025	7	1 (Jun 2025)

The above table exemplifies the Spike in 2020 which reflects heightened surveillance or outbreak spread. Year 2024 marks a surge in incidents and the **first recorded human death**. Therefore, the upward trend in fatalities (2024, 2025) is a serious concern.

Table 3: Species Affected by Bites

Species	Approx. # Affected
Humans	~110+
Goats	10–12
Cattle	7–9
Buffalo	3
Dogs	10+ bitten/killed

The table above shows that human exposure dominates, but livestock bites reveal livelihood threats. Repeated bites to domestic animals may signal multi-host transmission chains.

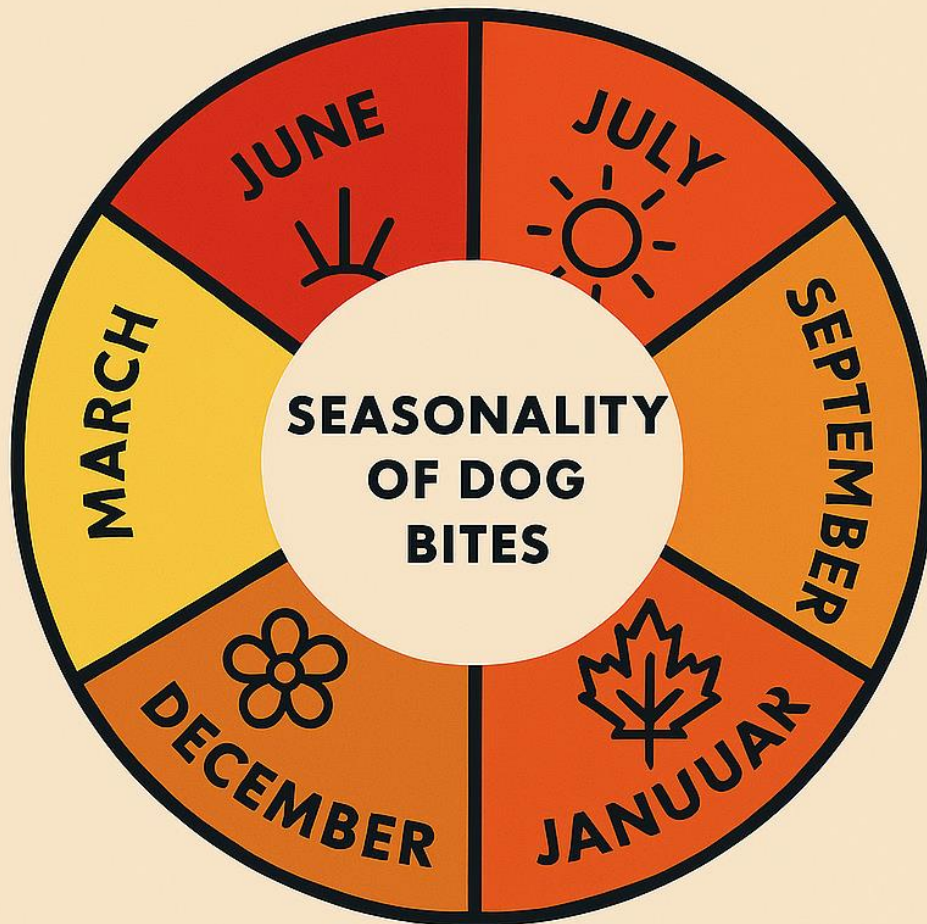
Table 4: Diagnostic Trends (Test Kit vs. CVL)

Outcome Type	Approx. Count
Test Kit Positive	25+
Tested Positive at CVL	~5–6
Not Tested / Unclear	15+

As evident from the table, field-level kits are widely used—but confirmation at CVL remains limited. Several entries note samples not sent, raising concerns about diagnostic gaps.

Seasonality of the dog bites between Kavre and other districts of Nepal

SEASONALITY OF DOG BITES



Source: NAWRC data (2018-2025)

- Red for peak months with high bite activity
- Orange for moderate-risk months
- Yellow for lower bite period

Table 5: Rabies Positivity by Nepali and English Month

<i>Nepali Month</i>	<i>Approx Month</i>	<i>Gregorian</i>	<i>Estimated Positive Cases</i>	<i>Seasonality Insight</i>
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Baisakh	April	Low (2–4)	Season warms up, cases begin rising
Jestha	May	Moderate (5–7)	Rising interactions
Ashad	June	High (8–10)	Pre-monsoon spike
Shrawan	July	Very High (~10–15+)	Monsoon season, peak in cases
Bhadra	August	High (~10+)	Sustained peak, dog cases prevalent
Ashwin	September	High (~8+)	Continued spike
Kartik	October	Moderate (5–7)	Beginning of cooldown
Mangsir	November	Lower (~3–4)	Cooler months, less activity
Poush	December	Low (~2–3)	Sparse cases
Magh	January	Very Low (~1–2)	Cold & quiet
Falgun	February	Very Low (~1–2)	Dry, low interaction
Chaitra	March	Very Low (~1)	Just before seasonal build-up again

Source: CVL data, (2014-2022)

The comparison of seasonality data of Kavre shows stark resemblance with the national data from other districts. Dogs dominate the case count, especially during Shrawan to Ashwin (July-Sep).

Monsoon months (Ashad to Ashwin i.e. June-Sep) are the clear **danger zone** with highest rabies confirmations.

Mapping the Results Against Dog Behavior Seasonality

High Bite Months (● Red: June–August)

These months coincide with:

- Monsoon onset and high humidity in Nepal, which can agitate dogs and impact scent trails.
- Breeding season spillover, especially in community dogs, heightening territorial aggression.
- Difficulty in waste management during rains, attracting and clustering roaming dogs.

● Moderate Bite Months (Sept–Nov)

- Post-breeding restlessness and lingering pack dynamics.
- Dashain and Tihar festivities mean more food waste and social movement, leading to heightened exposure.
- Cooler evenings may extend dog roaming hours.

● Lower Bite Months (March–May & Dec–Feb)

These months show less activity possibly due to:

- Cooler or transitional temperatures that reduce dog roaming.
- Fewer breeding behaviors or group formations.

Table 6: Trend Analysis of Rabies Samples Tested (FY 2014/15–2023/24)

Fiscal Year	Samples Tested	Positive Cases	Insights
2014/15– 2016/17	Low & steady (~50–60)	~22–34 cases	Quiet baseline, under-reporting likely
2017/18– 2019/20	Noticeable spikes (~73–80)	~54–57 cases	Surge in testing coincides with strategic rabies efforts?
2020/21– 2022/23	Variable (~40–60)	~25–44 cases	Slight dip post-pandemic, possible surveillance disruptions
2023/24	Highest: 300 tested	Highest: 246 positive	Massive surge: heightened awareness, outbreaks, better access to kits?

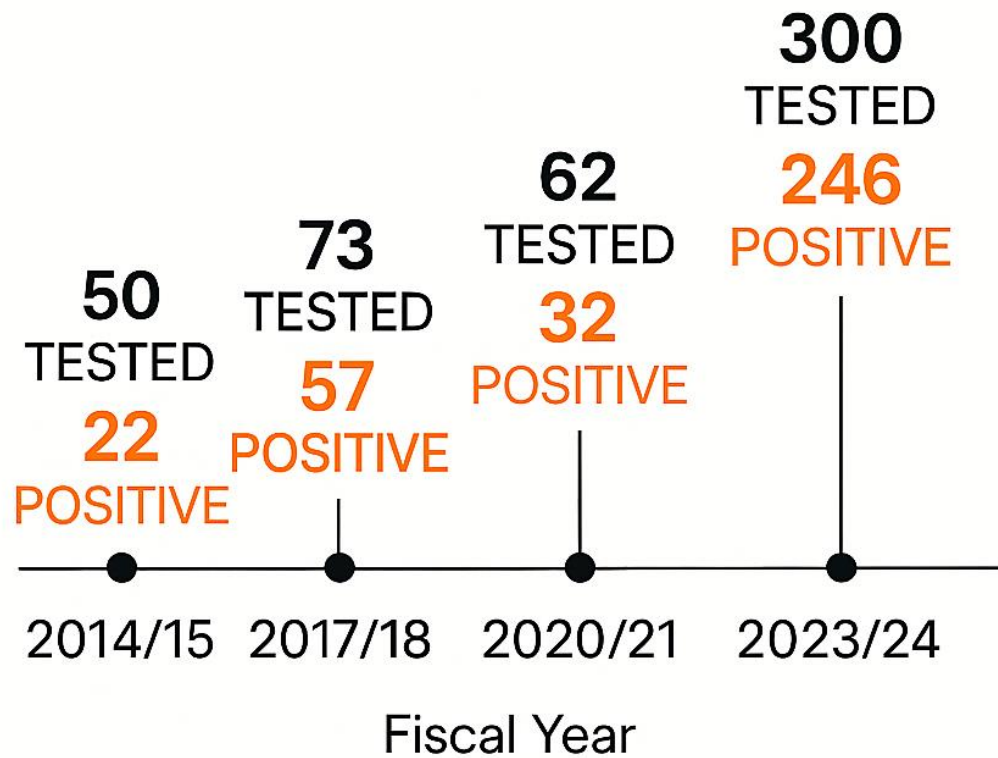
In 2023/24, there was unprecedented a 5 fold increase in rabies positive cases compared to previous years. Prior years show moderate and inconsistent testing, perhaps reflecting decentralized or underfunded capacity.

This chart reflects more than numbers—it mirrors **systemic growth, community vigilance,** and possibly **epidemic emergence.**

The 2023/24 spike could be due to:

- Mass dog bite outbreaks (e.g. Falgun & Kartik surges)
- Expanded test kit distribution (NAWRC, DLS engagement)
- Enhanced data reporting from municipalities

Trend Analysis of Rabies Samples Tested (FY 2014/15–2023/24)



Source: CVL (2014-2024)

Table 7: General Perception of Rabies in Kavre (Based on Participant Responses)

Participant	Age	Education	Experience with Rabies	Perceived Severity	Risk from Puppies	Symptom Appearance	Vaccination Timing	Frequency	Lick?	Scratch?	Deep Wound	Free Vaccination	Prevention Knowledge
1	42	Secondary	Yes	Death	Don't Know	After a Month	Within 24 hours	>1	No	Yes	Yes	No	>3

2	46	Post Graduate	Yes	Death	Yes	15 Days	Within 24 hours	7 times	No	Yes	Yes	N/A	>3
3	40	Graduate	Yes	Death	Yes	Few Months to a Year	Within 24 hours	>1	No	No	Yes	Yes	>3
4	31	Secondary	No	Death	Don't Know	Don't Know	Within 24 hours	3 times	Yes	Yes	Don't Know	Don't Know	Don't Know
5	20	Secondary	Yes	Severe	Yes	After a Year	AS AP	Unknown	Yes	Yes	Yes	Don't Know	Don't Know
6	42	Primary	Yes	Death	Yes	After 10 Days	Within 10 Days	7 times	Yes	Yes	Yes	Yes	>3
7	42	Primary	No	Death	Yes	2 Months	Within 24 hours	7 times	No	No	Yes	Yes	2
8	60	Literate	No	Don't Know	No	Month	Within 24 hours	Unknown	No	No	Yes	Yes	1

1. Severity Awareness

- Almost all participants described rabies as deadly, using words like “death” and “severe.”
- This shows high fear-based awareness, especially among those with prior exposure.

2. Risk From Puppies

- Many believed that puppies can transmit rabies, indicating some understanding of transmission regardless of age.

- However, a few responses were uncertain (“don’t know”), suggesting gaps in risk literacy.

3. Understanding of Symptom Onset

- There’s wide variation in perceived timing:

- From “10 days” to “after a year,” even “few months to a year.”

- This suggests that while people recognize rabies can incubate, the actual timeframe remains unclear for many.

4. Vaccination Knowledge

- Most knew rabies vaccine should be taken within 24 hours, which is reassuring!

- There was also awareness of multiple doses (e.g. “7 times”), and appropriate responses for scratches vs licks.

- But misconceptions persist:

- Some said “no vaccine for scratch” or “don’t know.”

- Knowledge about deep wounds, free availability, and preventive options varied.

5. Prevention & Broader Understanding

- A handful of participants could name more than 3 prevention strategies—likely those with higher education or prior experience.

- But others showed very limited or fragmented knowledge, suggesting educational outreach still needs to bridge the gaps between fear and informed action.

- Rabies is broadly perceived as deadly and urgent—which is good from a public health motivation lens. But there are key gaps around symptom development, vaccine protocol, and risk nuances.

Therefore, education efforts should focus on:

- Clarifying actual incubation periods

- Reinforcing vaccine importance for ALL exposures (scratch, lick, bite)

- Promoting prevention, not just emergency reaction

3.1 SWOT Analysis

Strengths

- High Awareness of Rabies Severity: Nearly all community respondents identify rabies as deadly, which can drive proactive health-seeking behavior.

- Availability of Rapid Test Kits: Field-level diagnostics are actively used, suggesting good accessibility and frontline vigilance.

- Strong Early Vaccination Knowledge: Most respondents understand the urgency of post-exposure prophylaxis within 24 hours.

- Improved Reporting and Testing (2023/24): A fivefold rise in confirmed cases reflects better surveillance—not just rising incidence.
- Seasonality Patterns Known: Clear trend of peak months aligns with behavioral ecology of dogs, supporting time-targeted interventions.

Weaknesses

- Limited CVL Confirmatory Testing: Few samples verified centrally; diagnostic gaps persist, risking misclassification.
- Knowledge Gaps on Symptoms and Puppy Risk: Misconceptions about incubation period and puppy transmissibility may hamper early response.
- Fragmented Prevention Literacy: While some can name multiple strategies, many show limited understanding or confusion.
- Uneven Geographic Surveillance: MandanDeupur only enters dataset in 2025—delayed surveillance creates blind spots.
- Sporadic Outbreaks in Non-hotspots: Panauti and Roshi have sudden cases without consistent monitoring, possibly missing sentinel warnings.

Opportunities

- Targeted Public Education Campaigns: Bridge fear-based awareness with actionable knowledge—especially around incubation, vaccines for minor exposures, and puppy transmission.
- Community Dog Management During Monsoon: Seasonal strategies can mitigate roaming and aggression patterns tied to humidity and waste.
- Enhanced Sample Flow to CVL: Closing the loop between field detection and lab confirmation will build confidence in diagnosis and intervention.
- Engagement of Local Municipalities: Capitalize on 2023/24's surge in municipal data reporting—scale to new wards like MandanDeupur.
- Livestock-Oriented Outreach: Protect rural livelihoods by educating farmers on animal exposure, early detection, and reporting protocols.

Threats

- Human Fatalities Emerging (2024–2025): Rising death toll marks a dangerous turn—could erode trust if not addressed swiftly.
- Multi-host Transmission Risk: Livestock and dogs being bitten suggests complex zoonotic chains—needs urgent research and containment.
- Diagnostic Drop-off and Unclear Cases: Non-testing and missing samples signal systemic weaknesses—data blindness at critical junctures.
- Cultural Festivity Exposure Risks: Dashain and Tihar-related movement and waste increase dog-human interaction—seasonal spikes in bites likely.

- Breeding Season Overlaps with High Rainfall: Aggressive dog behavior intensifies during monsoon, compounding risk.

4. Recommendations

1. Strengthen Surveillance and Reporting

- Immediate Action: Ensure all municipalities (esp. MandanDeupur, Panauti, Roshi) initiate standardized rabies case reporting and sample submission.
- Quarterly Data Sharing: Set up local public health meetings where updates are exchanged between wards, animal and human health centers and local organizations.
- Village-Level Sentinels: Identify 1–2 focal persons (health volunteers, vet techs) per ward to track dog bites and alert about unusual patterns.

2. Ensure Reliable Diagnostics

- Mandatory CVL Confirmation: For every field-positive result, ensure at least one confirmatory sample reaches the Central Veterinary Laboratory (CVL).
- Cold Chain Support: Provide portable coolers and training for safe sample transport.
- Diagnostic Hub Creation: Establish 2 sub-district mini-labs in high-incident areas like Banepa and Dhulikhel for better coverage.

3. Seasonal Dog Management Plans

- Monsoon Preparedness: In May–August, deploy community outreach teams focusing on:
 - Waste cleanup to reduce roaming dog clusters.
 - Temporary shelters for aggressive/roaming dogs.
- Breeding Season Awareness: Run educational radio campaigns on dog territoriality and bite risks during June–September.

4. Public Education Campaigns

- Myth Busting Workshops:
 - Clarify the incubation period (can range from 10 days to 1+ year).
 - Reinforce that scratches and licks also need vaccines.
- School-Based Learning:
 - Integrate rabies knowledge into Class 6–10 science curriculum.
- Festival Outreach (Dashain/Tihar):
 - Distribute flyers and run community awareness events during these high-risk bite months.

5. Boost Vaccine Accessibility

- Ensure Free Vaccine Stock: Regularly replenish rabies vaccines at all local health posts and inform residents.
- Mobile Vaccination Units: Launch pilot vans during peak bite months (June–September) for both humans and dogs.
- Record Keeping System: Maintain bite and vaccine records digitally to monitor trends and gaps.

6. Protect Livelihoods via Livestock Education

- Farmer Trainings: Teach farmers to recognize bite symptoms in goats, cattle, buffaloes.
- Prevention Protocol Cards: Distribute pictorial guides on immediate steps after animal exposure.
- Vet-Municipality Partnerships: Assign joint inspection teams to investigate livestock incidents.

7. Multisector Coordination

- Rabies Task Force: Form an inter-municipality working group with reps from health, veterinary, education, and sanitation offices.
- Budget Allocation Push: Encourage wards to allocate a fixed annual amount for rabies-related actions (data, education, waste management).
- Citizen Science Participation: Pilot a bite-reporting app or hotline, enabling residents to log events and receive guidance.

5. Summary and Conclusion:

Rabies in Kavre reveals a dynamic landscape shaped by geography, seasonality, diagnostics, and public awareness. Surveillance data highlights Banepa and Dhulikhel as recurring hotspots, with episodic flare-ups in Panauti, Roshi, and a new emergence in MandanDeupur (2025). The sharp spike in cases in 2020 and again in 2024 correlates with enhanced testing and municipal engagement. Alarmingly, human fatalities first appear in late 2024 and mid-2025—indicating a critical shift in public health threat levels. Seasonal patterns mirror national trends: monsoon months (June–September) see the highest bite activity, largely linked to dog breeding cycles, waste accumulation, and aggressive behaviors. Dogs remain the primary reservoir, but bite incidents in livestock—goats, cattle, buffalo—signal multi-host vulnerability and livelihood risks.

Field diagnostics are active, with test kits in use, yet limited confirmation by the Central Veterinary Laboratory (CVL) exposes a diagnostic gap. Public perception reveals high awareness of rabies' lethality but uneven understanding of symptom onset, transmission risk (especially from puppies), and appropriate vaccine protocols.

The 2023/24 surge in testing and positivity rates reflects both epidemic momentum and systemic growth in surveillance infrastructure, possibly driven by coordinated efforts between NAWRC and municipalities.

Kavre stands at a pivotal moment. The data tells not just a story of rising rabies risks—it tells one of response readiness, community awareness, and strategic opportunity. With timely intervention, Kavre can shift from reactive outbreak management to proactive rabies elimination.

By investing in:

- uniform surveillance across municipalities,
- strengthened lab confirmation pathways,
- targeted education during high-risk seasons, and
- mobile vaccine deployment with livestock integration,

local authorities can build a resilient ecosystem of prevention and care. The emerging threats demand no less. And the foundations is already in place due to active multisectoral engagement.

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Annexes

Annex 1: रेबिज रोगबारे बुझाई

सहभागीको कोड:

ठेगाना:

उमेर:

1. हजुरले रेबिज रोग लागेको कोहि व्यक्ति देख्नु वा चिन्नु भएको छ?
2. रेबिज कतिको घातक रोग हो?
 - a. साधारण
 - b. गम्भीर
 - c. ज्यान लिन सक्ने
3. सानो (१-३ महिनाको)कुकुरले टोकेमा रेबिज लाग्छ कि लाग्दैन?
4. शंकास्पद कुकुरले टोकेको कति समय पछि रेबिजको लक्षण देखिन्छ?
 - a. एक हप्ता
 - b. एक महिना
 - c. एक बर्ष वा सो भन्दा बढी
5. रेबिज रोगको लक्षणहरु के के हुन्?

6. शंकास्पद कुकुरले टोकेको कति समय भित्र रेबिजको खोप लिनुपर्छ?
7. सो खोप कति पटक लिनु पर्छ?
8. शंकास्पद कुकुरले छोएमा वा चाटेमा खोप लिनु पर्छ कि नाइ?
9. शंकास्पद कुकुरले पहिल्यै घाउ भएको ठाउमा कोतरेमा वा चाटेमा खोप लिनु पर्छ कि नाइ?
10. शंकास्पद कुकुरले गहिरो घाउ हुने गरि वा रगत बग्ने गरि टोकेमा खोप लिनु पर्छ कि नाइ?
11. सरकारी स्वास्थ्य केन्द्र वा अस्पतालमा रेबिजको खोप निशुल्क पाइन्छ कि नाइ?
12. रेबिज रोगबाट बच्न के के गर्नु सकिन्छ? (कुकुर छाडा नछोड्ने, कुकुरले असामान्य व्यवहार देखाएमा सम्बन्धित निकायमा खबर गर्ने, pre exposure prophylaxis etc.)

Annex 2: Proposal

1. Background

This document is submitted to the Livestock Service Office, Dhulikhel, Kavre in response to the call for its proposal on strengthening research capabilities on data collection, analysis and report writing focused on rabies prevalence and control strategies in Kavre district.

The World Health Organization (WHO), along with its partners—the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (WOAH), and the Global Alliance for Rabies Control (GARC)—has set a bold and inspiring goal to eliminate human deaths from dog-mediated rabies by the year 2030. This initiative is called “Zero by 30”.

Nepal is also making impressive strides toward this goal by aligning with this mission. A major milestone was the finalization of Nepal’s National Rabies Elimination Strategy 2024–2030, developed under the One Health framework, which brings together human, animal, and environmental health sectors.

Rabies is an endemic disease in Kavre district. Because of the geography of Kavre, with many rural and urban municipalities attached to forest, there is frequent contact of dogs with wild animals such as foxes, resulting in dogs becoming infected and carriers of rabies. These dogs frequently bite humans and animals, especially goats, cattle and buffalo spreading rabies. As of now, there is no publicly available district-specific data on rabies prevalence in past, present trend, and future projection prevalence in Kavrepalanchok from recent studies or government reports. Most national-level data in Nepal focuses on broader regions like the

Terai, where rabies incidence is highest due to dense human and stray dog populations. And Without numbers showing progress (or lack thereof), it's hard to argue for continued support. This also affects information of solution focused programs for the issues surrounding rabies in the district. Therefore, the data and the findings generated from this study will assist greatly in Detecting Patterns and Predicting the Future trends of incidence of rabies. This will also Inform Policy and Funding Decisions and Evaluate Program Effectiveness. These findings will also be useful in the local, provincial and central government to effectively mobilize the budget in 'Zero by 30' initiative in coming days.

2. Terms of Reference

This study aims to detect Patterns and Predict the Future trends of incidence of rabies in Kavre district using SPSS and generate recommendations from appropriate stakeholders in order to inform policy and funding decisions and evaluate program effectiveness.

- Collect, organize, visualize and analyze time series data of rabies prevalence.
- Detect trend of rabies using linear regression and average
- Detect seasonal decomposition using monthly data on rabies due to dog bites
- Use forecasting tools to predict future values
- Find out Effectiveness of Use of Tools and Technologies for the initiative 'zero by 30'
- Identify possible opportunities for sustainable and committed programs
- Generate recommendations on continuously upgrading national policies and guidelines on eliminating human deaths from dog-mediated rabies and

-Innovate solutions on improving surveillance system to track rabies cases in both humans and animals

3. Approaches to Study

We propose following procedures to carry out the study to ensure high quality study report, making the difference.

3.1 Meeting Ethical Standards

To carry out our research responsibly and ethically, we follow the ethical and professional conduct set by the Nepal Veterinary Council (NVC) and the Nepal Health Research Council (NHRC), by keeping animal welfare, human welfare and transparency as our guiding principals.

3.2 SWOT Analysis

A SWOT analysis is a tool used to look at a situation from four angles:

- S = Strengths → What are we doing well? What advantages do we have?
- W = Weaknesses → What are our gaps or problems?
- O = Opportunities → What chances do we have to improve or grow?
- T = Threats → What risks or obstacles might get in our way?

This will allow decision-makers to fine-tune strategies, better use limited resources, and anticipate challenges before they derail progress.

3.3 Appreciative Inquiry (AI)

“AI values goods and services rather than bads and problems.” One of the most important aspects of AI is the phrasing of the questions- what has worked well? What has contributed to things working well? What has been accomplished? Using this approach, we will emphasize what has worked well and at the same time pointing to areas where changes are needed.

3.4 Participatory Approach

We will use participatory methods in the data collection process to maximize the involvement and ownership of the stakeholders working in this sector or individuals with lived experience. For qualitative data collection, we will use semi structured interview guide with relevant stakeholders and key informants to generate information based on ToR.

4. Proposed Methodology

The methodology will be both strategic and practical. To systematically meet the goals of this study, this research will incorporate triangulation method using both quantitative and qualitative approaches to facilitate validation of data. The study team will intermix quantitative data, semi structured interview, document analysis, digital photography etc as tools of study.

5. Data Management and Analysis

To illustrate the study findings, qualitative data will be analyzed using content analysis. The themes generated will typically add depth, detail and nuances to the quantitative findings rendering insights through illuminating human interesting stories.

Basic descriptive statistics using MS Excel and SPSS will be used to analyze quantitative data. Furthermore, forecasting Tools: Like ARIMA (Auto-Regressive Integrated Moving Average), will be used to predict future values.

6. Consultant Qualifications and Experience

- Minimum **five years of experience** in carrying out implementation research on animal health, animal care and protection.
- Track record of **successfully completing projects** within the last **three years**, with documented results.

7. Team Composition and Qualifications

- Each specialist has a **minimum of five years of experience** in the relevant field.
- Specialists possess a **Master's degree** or higher in their subject area.
- Resource persons hold at least a **Bachelor's degree** in the relevant field.
- Team members are well-versed in **promotion, leadership, and coordination**, with the **Team Leader** capable of effectively communicating with relevant agencies.

8. Study Plan and Activities

Activities	Month							
	Asadh-2082				Shrawan-2082			
1. Contract Signing	■							
2. Literature Review		■	■	■				
3. Field Observation and Stakeholder Interaction		■	■	■				
4. Data Collection and Analysis		■	■	■				
5. Preparation of Detailed Project Report (DPR)		■	■	■				
6. Draft Report Submission					■	■		
7. Presentation of Draft Report at the Livestock Service Office (with interaction)							■	
8. Final Report Submission after								■

incorporating feedback									
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9. Evaluation Criteria

Criteria	Full marks	Obtained marks
Work Experience of Consultant Firm	25	
Methodology and Responsiveness to TOR	20	
Qualification and Experience of Key Personnel	45	
Technology Transfer / Training	-	
Participation of Local Personnel	10	
Total	100	

10. Estimated Cost Breakdown

SN	Activities	Unit	Quantity	Rate	Estimated Budget	Bills	Remarks
1	Personnel Remuneration				35,000/-		

2	Travel, Accommodation, and Transportation				20,000/-		
3	Workshop/Meetings and Printing/Documentation Costs				10,000/-		
4	Miscellaneous Expenses				35,000/-		
	Total Estimated Budget				100000/-		

Total Estimated Budget: NPR. 1,00,000 [Rupees One Hundred Thousand]

(Including applicable Value Added Tax)