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Assessment of Community Knowledge and Practices towards Rabies Prevention: A Cross-Sectional Survey in Bharatpur, Chitwan, Nepal

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Simple Summary: Our study found that 81.50% of respondents were aware that rabies is a zoonotic disease, and 42.10% had satisfactory knowledge of rabies. Knowledge levels were associated with gender, education, and income. Interestingly, some individuals relied on traditional medicine and healers for the immediate first aid and treatment of animal bites. Additionally, a few pet owners had not vaccinated their pets. These findings underscore the need for targeted educational interventions to improve rabies awareness and the potential of effective awareness campaigns to save lives.

Abstract: In many developing countries, where rabies is prevalent among dog populations, humans are at risk of contracting the disease. Recent reports from Nepal suggest that around 30,000 cases of pet and more than 100 human rabies cases occur each year, with the highest risk being in the Terai, although these numbers may be underestimated. Knowledge and practices related to rabies prevention are crucial in combating the disease. However, there is not enough data on the understanding and preventive measures of rabies among the local population in Nepal. Therefore, this study aimed to evaluate the knowledge and practices regarding rabies prevention among the people of Bharatpur-12, Chitwan, Nepal. The study, conducted in February 2022, involved a cross-sectional survey of 271 respondents selected through systematic random sampling. A semi-structured questionnaire was used for one-on-one interviews. Among the surveyed respondents, a significant proportion (81.50%; n = 221/271) correctly understood rabies is zoonotic disease. Furthermore, 73.10% (n = 198/271) could correctly identify the animals susceptible to rabies, while 39.9% (n = 108/271) knew the causative agent. Additionally, 46.5% accurately listed the modes of transmission, and a majority (86.70%; n = 235/271) recognized the signs and symptoms of rabies in animals and humans. Overall, 42.06% (n = 114/271) of the respondents demonstrated satisfactory knowledge. Out of the 271 respondents, 22.9% (n = 62) owned pets, and 39.11% (n = 106) reported incidents of animal bites within their families, with dog bites being the most commonly mentioned (92.46%; n = 98/106). The majority (81.14%; n = 86/106) sought treatment on the same day as the incident occurred. About half of them (50%; n = 53/106) cleaned the wound with soap and water, while a small percentage (5.66%; n = 6/106) relied on traditional medicine as immediate first aid after an animal bite. The level of knowledge was found to be associated with gender (p = 0.04), educational status (p = 0.05), and family monthly income (p = 0.007). These findings highlight the importance of educating the community in Nepal about rabies control and prevention measures and underscore the need for targeted educational interventions to improve rabies awareness and the potential of effective awareness campaigns to save lives. Raising awareness about health-seeking behavior and community members' role in controlling, preventing, and eliminating rabies is crucial.

Keywords: Bharatpur; community; rabies; knowledge; practice; prevention; risk; vaccination

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1. Introduction

Rabies is a neglected tropical zoonotic disease caused by a single-stranded RNA virus belonging to the genus Lyssavirus, the family Rhabdoviridae [1]. The primary transmission mode is through the bite of a rabid animal. However, it can also be transmitted through scratches, abrasions, or open wounds exposed to the saliva of a rabid animal. Human-to-human transmission is infrequent, and transmission through aerosol has been reported only in a few cases [2,3]. Dogs are responsible for 99% of all human rabies transmission and are the primary source of human rabies deaths [4]. The initial symptoms of human rabies include fever, tingling, burning sensation at the wound site, and inflammation of the brain and spinal cord [5]. Clinically, rabies presents in two forms: furious rabies, characterized by hyperactivity, hydrophobia, excessive salivation, and aerophobia, and paralytic rabies, characterized by paralysis and coma [6]. Rabies can be prevented through pre- and post-exposure vaccination, mass dog vaccination, and awareness programs [7].

Globally, rabies is responsible for an estimated 59,000 human deaths each year, with 95% occurring in Africa and Asia [8]. In Asia alone, rabies accounts for 35,172 human deaths annually. India accounts for 59.9% of these rabies deaths in Asia and 35% of the global total [9]. In Nepal, more than 100 human rabies cases are reported each year, along with 30,000 cases in pets [10]. In the fiscal year 2018-19 (2075/76 Nepalese year), 18 human deaths and 35,250 cases of animal bites were reported [10]. Similarly, there were 32 fatalities in 2017/18, 8 in 2016/17, 6 in 2015/16, 13 in 2014/15, and 10 in 2013/14. As per the quarterly bulletin of veterinary epidemiology covering the period from 2014 to 2017, eight districts in Nepal (Kanchanpur, Dailekh, Jajarkot, Chitwan, Dhading, Ramechhap, Siraha, and Morang) experienced more than 10 rabies outbreaks [11]. Nepal is part of the "United Against Rabies Collaboration", which was formed by the World Health Organization, Food and Agriculture Organization, World Organization for Animal Health, and Global Alliance for Rabies Control in 2015, with the goal of eliminating dog-mediated rabies by 2030 through the "Zero by 30" initiative [3] and the Nepalese government is also planning to develop a roadmap for the elimination of dog-mediated rabies by 2030. In Nepal, multiple institutions actively engage in diverse initiatives for rabies prevention and control. However, the effectiveness of these efforts is not well-documented. In the human health sector, the Sukraraj Tropical and Infectious Disease Hospital specializes in diagnosing and treating rabies cases [12]. The Department of Health Services (DHS) implements nationwide programs to educate the population and provide post-exposure care. Free Rabies Immune Globulin (RIG) is available in all seven provincial hospitals, and cell culture vaccines are widely used. In the animal health sector, the Department of Livestock Services (DLS) educates pet owners and operates a Rabies Vaccine Production Laboratory (RVPL) using cell culture technology [3]. Pet vaccination is conducted in government veterinary hospitals and private clinics, with occasional free vaccinations during municipal campaigns for rabies control and prevention [3,11].

Chitwan, located in the inner Terai region of Nepal, is at high risk for rabies. From March 2018 to February 2020, the Veterinary Hospital and Livestock Service Expert Center (VHLSEC) and the Veterinary Teaching Hospital of Agriculture and Forestry University in Chitwan, Nepal, reported 196 animal bite cases. Among these cases, 12 tested positive for rabies (Rapid Rabies Ag Test Kit manufactured by Bionote Inc., Hwaseongsi, Korea) [13]. In May 2019, a newspaper article reported 12 animals in Chitwan, Nepal, had died from rabies within eight months. The wards affected by the rabies virus in cows, buffaloes, and goats were wards 6, 7, 8, 11, 12, 14, 18, 25, and 27 out of the 29 wards in Bharatpur Metropolitan City [14]. Studies showed a knowledge gap and inadequate prevention practices in countries with high rabies prevalence [11,15–18]. Understanding community practices and treatment-seeking behavior is crucial for effectively controlling human rabies. Therefore, the primary objective of our research was to investigate the knowledge and practices related to rabies prevention in Bharatpur-12, Chitwan, Nepal. By focusing on this specific region, our study aimed to provide valuable insights that can inform and support the development of effective strategies for rabies prevention. By examining the knowledge

levels and understanding the practices surrounding rabies prevention in Bharatpur, we can identify gaps and challenges that need to be addressed. This knowledge can then be used to develop targeted interventions and educational programs tailored to the community's specific needs. Ultimately, the findings of this study have the potential to contribute to the formulation of comprehensive and evidence-based rabies prevention strategies, leading to a reduction in the incidence of human rabies cases in Nepal.

2. Materials and Methods

2.1. Study Area and Study Design

The was carried out in ward number 12 of Bharatpur Metropolitan City, Chitwan, Nepal. This ward spans an area of 12.53 square kilometers (27°40′22.728″ N and 84°26′32.892″ E) and comprises 2837 households, accommodating a total of 10,939 individuals. Using a quantitative method, a descriptive cross-sectional study design was utilized to assess knowledge and practices related to rabies. This design was chosen because it provides comprehensive details, involves a large participant pool, and generates precise and targeted responses. The study population consisted of individuals aged 18 to 60 residing in ward 12 of Bharatpur Metropolitan City, Chitwan. Exclusions from the study encompassed individuals without permanent housing or residing in rented accommodations within ward number 12, those with mental illness, and those unwilling to provide written consent.

2.2. Sample Size and Sampling Method

The study's sample size was determined by a hypothesis of 95% confidence level, with a margin of error of 6%, and considering the 3058 households in the Bharatpur-12. This gave a computed value of 246. Further, we added 10% contingency to the sample size; thus, a minimum of 271 participants were targeted for the study.

A systematic random sampling method was employed in the study, which involved two sampling stages. Initially, Bharatpur Metropolitan City Ward No. 12 was selected as the primary sampling unit. The total number of Tole Development Committees within the ward was obtained from the ward office, and five Tole Development Committees (Chetana Tole Development Committee, Jilla Prasasan Ekata Tole Development Committee, Nawaratna Tole Development Committee, Aananda Tole Development Committee, and Aastha Tole Development Committee) were randomly chosen. To ensure accurate sampling and create a sampling frame, a week before data collection, a comprehensive list of all households was collected from the selected Tole Development Committees.

Next, a sampling frame was developed in Microsoft Excel using the household lists from the five Tole Development Committees. Systematic sampling was employed to select the final households. Each household in the sampling frame was assigned a number, and a random number (in this case, 3) was generated in MS Excel to select the first sample. Subsequent samples were determined using a fixed interval (in this case, the Kth value was 4). Once the households were selected, an individual respondent was chosen from each household, assuming one respondent per household. The senior member within the age range of 18 to 60 was chosen as the respondent. In cases where the selected sample was not available, another household member was selected based on their position in the sampling frame, maintaining the sample interval.

2.3. Questionnaire Design, Pre-Test and Data Collection

A semi-structured questionnaire was meticulously developed and regularly reviewed in collaboration with the supervisor and subject expert to ensure its alignment with the proposed study objectives. To achieve content validity, items were drawn from previously validated studies, developed based on an extensive literature search, and frequently reviewed to enhance their quality. The questionnaire underwent a pre-testing phase in a different ward of Bharatpur Metropolitan City in the Chitwan district, excluding ward no. 12, with a 10% sample size to assess the tool's reliability. Necessary adjustments were made accordingly while facilitating accessibility by translating the questionnaire back and forth

between Nepali and English languages. Data collection was conducted using face-to-face interviews, with consent obtained from each participant before the interviews.

2.4. Data Management and Analysis

The collected data were subjected to data mining and processing, followed by entry into IBM SPSS 20 software for subsequent analysis. Descriptive statistics, such as frequencies, percentages, and medians, were computed to provide an overview of the data. Knowledge level was divided into satisfactory and unsatisfactory by taking reference with median score. Satisfactory knowledge was determined among respondents scoring above or equal to median. Similarly, knowledge below median was unsatisfactory. Additionally, inferential statistics were employed, specifically the Pearson chi-square test at a significance level of 5%, to explore potential associations between the level of knowledge and selected explanatory variables [11].

3. Results

3.1. Socio-Demographic Characteristics of Respondents

A total of 271 households were interviewed, resulting in a response rate of 100%. The age range of the respondents varied from 18 to 60, with a median age of 49. Among the respondents, 57.2% were female. Regarding educational background, 48% had secondary education, and 26.9% had higher education. The majority of respondents (29.53%) identified themselves as homemakers. The majority were married (77.1%) and practiced Hinduism (88.6%). Brahmins constituted more than two-thirds of the respondents (88.6%). Concerning monthly family income, 66.4% had an average income, and 26.9% had a higher income. Of the 271 respondents, 22.9% owned pets, and 39% reported a history of animal bites within their families (Supplementary Table S1).

3.2. Participants' Knowledge Regarding Rabies

Out of the total 271 respondents, a significant proportion, 81.50%, were aware that rabies is a zoonotic disease (Table 1). Additionally, 73.10% correctly identified the susceptible hosts of rabies, while 39.9% knew the causative agent of the disease. Moreover, 46.5% accurately listed the mode of rabies transmission, and the majority of (86.70%) respondents could identify the signs and symptoms of rabies in animals and humans. Regarding awareness of the potential dangers, 55.40% of the respondents recognized that a rabid animal's bites to the head, neck, and face could be particularly serious. Similarly, 46.50% acknowledged that rabies is dangerous due to its lack of treatment and fatal outcome. More than two-thirds (89.30%) understood the importance of preventing contact between pets and stray or community animals to mitigate the risk of rabies.

Regarding safety precautions, a significant majority (86.70%) recognized the need for personal protective equipment to prevent bites and saliva exposure when caring for a person infected with rabies. Additionally, over half of the participants (56.80%) understood immediate first aid management for an animal bite involved washing the wound with soap and water. A large majority (93.70%) acknowledged that applying chili powder and bandaging the wound following a bite from a rabid animal was not recommended. Almost all respondents (98.20%) knew that anti-rabies vaccination should be administered after a bite from a rabid animal. However, only 39.9% knew the vaccine was safe for pregnant and lactating mothers. Overall, 57.90% of the 271 respondents exhibited an unsatisfactory level of knowledge, while 42.10% had a satisfactory level of knowledge regarding rabies (Table 2).

Table 1. Knowledge regarding rabies among community people of Bharatpur-12, Chitwan, Nepal (n = 271).

Statements	Correct Response	
	Frequency	%
Rabies is zoonotic disease that transmits from rabies infected animals to humans.	221	81.50
Susceptible hosts of rabies are dog, bat, cat, monkey, fox and remaining mammals.	198	73.10
Virus is the causative agent of rabies.	108	39.9
Bites and saliva of any rabid animal is the mode of the transmission of rabies.	126	46.5
Hydrophobia, excessive salivation are the signs and symptoms of rabies in animals.	235	86.70
Irritability and anger are the signs and symptoms of rabies in human.	235	86.70
Parts of body when bitten by rabid animal would be serious are head, face and neck.	150	55.40
Rabies is considered as dangerous because it has no treatment and is fatal.	126	46.50
For preventing pet animals from rabies, we shouldn't let them in contact with any community animal.	242	89.30
Personal protection equipment should be adopted while caring rabies infected person to avoid bites and saliva.	235	86.70
Washing the wound with soap and water is the immediate first aid management after dog/cat and other animal bite.	154	56.80
We shouldn't apply chili powder and shouldn't bandage the wound following rabid animal bite.	254	93.70
We should do anti-rabies vaccination following the animal bite.	266	98.20
It is safe to pregnant or lactating mothers for anti-rabies vaccination	108	39.9

Table 2. Level of knowledge regarding rabies prevention among community people of Bharatpur-12, Chitwan (n = 271).

Level of Knowledge	Frequency	Percentage (%)
Satisfactory (≥10)	114	42.06%
Unsatisfactory (<10)	157	57.93%

3.3. Participants' Practice Regarding Rabies Prevention

Among 271 participants, 22.9% reported owning a pet animal. Among them, 90.32% (56/62), the majority, had ensured their pets received anti-rabies vaccination (Table 3). Furthermore, 27.09% (23/62) had undergone animal birth control surgeries for their pets. Around sixty-seven percent (42/62) followed keeping their pets in a kennel or tied with a chain. Among those, 56.46% (35/42) reported keeping their pets in a kennel or tied to a chain for approximately 1–12 h daily. Of the 271 respondents, 39.11% had a history of animal bites within their families and among them nearly all (92.46%) mentioned that dog was the biting animal. The majority (81.14%) sought treatment on the same day as the bite incident occurred. Fifty percent (53/106) used soap and water to wash the wound, while around 5.66% utilized traditional medicine as immediate first aid following an animal bite. Among those who used traditional medicine, 50% (3/6) specifically used goat weed to manage the animal bite immediately. Almost all (91.50%) sought treatment at health institutions for animal bites. Additionally, more than two-thirds (88.67%) received vaccination after being bitten by an animal.

Table 3. Practice regarding rabies prevention among community people of Bharatpur-12, Chitwan (n = 271).

Variables	Category	Response	
		Frequency	%
Presence of pet animals			
	Yes	62	22.9
	No	209	77.10
If yes, rabies vaccination status (n = 62)			
	Yes	56	90.32
	No	6	9.68
Animal birth control surgeries status (n = 62)			
	Yes	23	37.09
	No	39	62.91
Keep pet animals in kennel or tie with chain (n = 62)			
	Yes	42	67.75
	No	20	32.25
If yes, time to kept (n = 42)			
	1–12 h	35	56.46
	13–24 h	7	43.54
History of animal bite in family			
	Yes	106	39.11
	No	165	60.89
If yes, which animal (n = 106)			
	Dog	98	92.46
	Cat	2	1.88
	Fox	4	3.78
	Monkey	1	0.94
	Other	1	0.94
Time to sought for treatment (n = 106)			
	Within same day	86	81.14
	Within 2 to 7 days	19	17.92
	Above 7 days	1	0.94
Immediate first aid practice follows (n = 106)			
	Did not do anything	46	43.40
	Washed the wound with soap and water	53	50.00
	I had tied the wound tightly with cloth	1	0.94
	Had used of traditional medicine	6	5.66
If conventional medicine, substance used (n = 6)			
	Turmeric powder	1	16.66
	Goat weed	3	50
	Others	2	33.34
Place for treatment (n = 106)			
	Health institutions	97	91.50
	Traditional Healers	7	6.61
	Both	2	1.89
Vaccination done after being bitten by animals (n = 106)			
	Yes	94	88.67
	No	12	11.33

3.4. Association between Level of Knowledge and Explanatory Variables of Rabies

In this study, the chi-square test was employed to analyze the relationship between the independent variables and the level of knowledge. The results indicated that significant differences in the level of knowledge were observed concerning gender ($p = 0.04$), family monthly income ($p = 0.007$), and education status ($p = 0.05$) (Table 4). However, no significant differences were found in the level of knowledge based on age, occupation status, family type, presence of pet animals, family history of animal bites, marital status, religion, and ethnicity.

Table 4. Association between level of knowledge and some explanatory variables of rabies among community people of Bharatpur-12, Chitwan ($n = 271$).

Variables	Category	Level of Knowledge		Chi-Square	*p*-Value
		Unsatisfactory (%)	Satisfactory (%)		
Age group				0.56	0.45
	18–30	25 (37.9%)	41 (62.1%)		
	31–60	88 (43.1%)	116 (56.9%)		
Gender				4.133	0.04 *
	Male	41 (35.3%)	75 (64.7%)		
	Females	73 (47.7%)	80 (52.3%)		
Occupation				1.24	0.53
	Agriculture	12 (38.7%)	19 (61.3%)		
	Business	36 (47.4%)	40 (52.6%)		
	Others [1]	66 (40.2%)	98 (59.8%)		
Marital status				0.07	0.78
	Others than married [2]	27 (43.5%)	35 (56.5%)		
	Married	87 (41.6%)	122 (58.4%)		
Religion				2.34	0.12
	Hindu	97 (40.4%)	143 (59.6%)		
	Others than Hindu [3]	17 (54.8%)	14 (45.2%)		
Ethnicity				2.91	0.23
	Brahmin/Chhetri	77 (39.1%)	120 (60.9%)		
	Janajati	26 (48.1%)	28 (51.9%)		
	Others ≠	11 (55.0%)	9 (45.0%)		
Family monthly income				7.19	0.007 *
	Below 10 thousands	13 (72.2%)	5 (27.8%)		
	Above Ten Thousands	101 (39.9%)	152 (60.1%)		
Family type				2.07	0.14
	Nuclear Family	71 (45.8%)	84 (54.2%)		
	Joint Family	43 (37.1%)	73 (62.9%)		
Educational status				3.67	0.05 *
	Illiterate and not formal education	13 (61.9%)	8 (38.1%)		
	literate with formal education	101 (40.4%)	149 (59.6%)		
Presence of pet animals				0.001	0.98
	Yes	26 (41.9%)	36 (58.1%)		
	No	88 (42.1%)	121 (57.9%)		
History of animal bite in family				0.82	0.36
	Yes	41 (38.7%)	65 (61.3%)		
	No	73 (44.2%)	92 (55.8%)		

[1] Labor, Foreign employment, House maker, and students. [2] Single, Separated, and Widow/Widower. [3] Buddhist, Christian, Muslim. ≠ Dalit, Madhesi. * Statistical significantly associated (by Pearson's chi-square).

4. Discussion

In our study, 81.50% (221/271) of the respondents knew that rabies is a zoonotic disease. Similarly, the study of Niraula et al., (2021) showed that 89.3% of the respondents knew about the zoonotic nature of rabies in Dang, Nepal [19]. Moreover, another study conducted in Nepal revealed that 55–70% of participants knew about the potential transmission route of rabies through dogs [20]. Only 39.9% (108/271) of the respondents knew the virus causes rabies, while 86.70% (235/271) were aware of the mode of rabies transmission. In this study, less than half of the respondents (42.10%; 114/271) demonstrated satisfactory knowledge of rabies; this aligns with similar findings reported in other studies. In a survey among human and animal health professionals in Senegal, 35.8% of the participants exhibited sufficient knowledge of rabies [21]. In South Gondar, Northwest Ethiopia, 51% of the community respondents had poor knowledge of rabies [22]. In Dedougou, Burkina Faso, 34.5% of the participants from dog-owning households had satisfactory knowledge of rabies [23]. Similarly, 53% of the dog owners in Kigali city, Rwanda had sufficient knowledge of rabies [24]. In Pakistan, 38.7% of the interviewed population, comprising community members, had no knowledge about the signs and symptoms of rabies [25]. Furthermore, among cattle owners in selected areas of Bhutan who were aware of rabies, 39% of the participants (195 individuals) possessed adequate knowledge about the disease [26]. These findings highlight the variations in knowledge levels among different populations of different countries and emphasize the need for targeted educational interventions to improve rabies awareness.

Our study identified statistically significant associations between the knowledge level and gender ($\chi 2 = 4.13$, $p = 0.04$) and education ($\chi 2 = 3.67$, $p = 0.05$). These findings are consistent with previous research conducted in Odisha, India [27], South Gondar, Northeast Ethiopia [22], and Addis Ababa, Ethiopia [28]. Additionally, our study revealed a significant association between the level of knowledge and income ($\chi 2 = 7.19$, $p < 0.007$), which aligns with a similar outcome reported in a study conducted in South Gondar, Northeast Ethiopia [22]. In contrast to our findings, previous studies have reported a significant association between socio-demographic parameters such as age and occupation and knowledge level [22,28]. Similarly, our study did not find a significant association between the level of knowledge and pet (dog) ownership, whereas a study conducted in Ethiopia reported a significant association [29]. The presence or absence of a statistically significant association of knowledge with demographic variables in our study versus others may be attributed to various factors. These factors include differences in sample size, study area, and study timeframe, as well as potential variations in the characteristics of the study population. Other factors such as the measurement tools used, data analysis techniques, and even cultural or regional differences might contribute to the divergent results. Considering all these demographic factors is crucial when designing and implementing a rabies control program in any community. Although some demographic variables may not have shown statistical significance in this study, it is essential not to overlook factors such as pet ownership, occupation, and ethnicity. These variables can still play a significant role in shaping knowledge and practices related to rabies prevention. In developing countries like Nepal, it is common to observe higher knowledge levels among literate individuals, people with comparatively higher incomes, and in males compared to females. It is important to consider gender dynamics and the roles individuals play within their households and communities when designing educational interventions and rabies control programs. Recognizing and involving all segments of the population, including men and women, and tailoring awareness campaigns to specific demographic groups can achieve a more comprehensive and practical approach to rabies control.

Among 271 respondents, 62 (22.9%) owned pet dogs, and among them, 90.32% (56/62) had vaccinated their dogs. The percentage of people vaccinating their pet dogs is better than in other studies conducted in Gujarat, India (88%) [30], rural Nepal (82.9%) [11], Mekelle City, Ethiopia (79%) [29], Bali, Indonesia (74%) [31], Tanzania (51%) [15], Punjab, Pakistan (25.9%) [32], Northwest Ethiopia (19.8%) [22], and Jimma Town, Ethiopia (4.8%) [33]. This

could be attributed to the fact that the study area is an urban city near the Veterinary Hospital and Livestock Services Expert Center, which conducts various rabies awareness programs and free rabies vaccination campaigns. Additionally, Bharatpur is renowned as a medical city in Nepal, with Bharatpur Hospital and other private hospitals situated very close to the study area. Despite various rabies vaccination campaigns conducted in the study area, around 10% did not vaccinate their dogs, and this might be due to limited knowledge about vaccination importance and schedules, vaccine unavailability, high costs, distant vaccination locations, and ignorance. Additionally, only 37.09% (23/62) of the respondents had opted for animal birth control (ABC) surgeries, which could be attributed to a lack of awareness regarding the importance of ABC, limited access to these services, and associated cost. The sterilization of dogs can impact human attitudes and behaviors towards dogs, including heightened safety perception and pride in owning sterilized and vaccinated dogs, resulting in improved caregiving behaviors [34]. This positive shift can enhance community support and involvement in rabies vaccination campaigns [35].

Among the 62 pet owners, 32.25% did not confine their pets in a kennel or tie them with a chain, allowing them to roam freely. In contrast to our study, in a study in Addis Ababa, Ethiopia, 89.5% of respondents secured their pets by keeping them in a cage or tied in the compound [28]. This is one of the significant concerns in rabies control in endemic countries. Many individuals purchase or adopt small puppies, but when they grow into larger dogs, they may no longer find them appealing and choose not to keep them at home. Additionally, some people feed and care for 1–2 community dogs daily, considering them their own, but they do not bring them into their homes. The local government should clearly distinguish between owned and community dogs and implement a system for registering owned dogs at the ward or municipality level. Community people should be responsible for their dogs' rabies vaccination and animal birth control (ABC). At the same time, the local government should take responsibility for the welfare of community dogs.

Washing a dog bite wound with soap and water for a minimum of 15 min is recommended and may enhance affected animals' survival by 50% [36]. Among 271 respondents, 39.11% (106/271) reported a history of animal bites in their family. Fifty percent (53/106) of them washed the wound with soap and water as immediate first aid management, which is better than in Tamil Nadu, India (43.07%) [37], Gondar Zuria, Ethiopia (30.0%) [38], Kigali Rwanda (20.4%) [24], Kathmandu, Nepal (10%) [39], and Cameroon (6%) [40]. The variation in practices could be attributed to varying levels of awareness within different communities. Our study found that 5.66% (6/106) of the respondents, either themselves or someone in their family, still used traditional medicine such as turmeric powder and goat weed as immediate first aid management for animal bites. The prevalence of such practices within the population can be linked to lower levels of education and awareness. These practices present challenges and can potentially contribute to future issues and an elevated risk of rabies transmission.

The majority of respondents (91.50%; 97/106) sought treatment at health institutions after a dog bite. However, 6.61% (7/106) of the respondents or someone in their family still sought treatment from traditional healers. Studies from South Gondar, Northwest Ethiopia [22], El Jadida Region, Morocco [16], Satkhira Sadar, Bangladesh [41], rural Puducherry, India [42], Abia State, Nigeria [43], and northwest Ethiopia [22] also found people still seeking treatment from traditional healers. The preference for traditional healing methods could stem from a combination of limited knowledge, cultural beliefs, and convenient access to conventional medicine and healers. This knowledge gap puts communities at risk of rabies and significantly contributes to human fatalities. Furthermore, such practices pose challenges and create obstacles that hinder the progress towards achieving the goal of "United against Rabies" to eliminate dog-mediated rabies by 2030.

The study conducted in a small area of an urban city with predominantly literate respondents provides valuable insights into the knowledge and practices related to rabies prevention. However, to gain a more comprehensive understanding of the rabies landscape in Nepal, future research should encompass both rural and urban areas and include a

diverse range of participants in terms of education, income, and occupation. This broader scope will allow for a more representative sample and a better understanding of the challenges and needs specific to different populations. Additionally, it is crucial to consider the knowledge levels of children in future studies. Targeted education for children can have a significant impact on long-term community changes. By equipping children with accurate and comprehensive knowledge about rabies prevention, they can become advocates for change within their families and communities, contributing to a sustained reduction in the incidence of rabies. Overall, expanding the research scope to include diverse populations, both geographically and demographically, and considering the knowledge levels of children will provide a more holistic understanding of the current state of rabies knowledge and practices in Nepal.

5. Conclusions

This study revealed that 81.50% of respondents were aware of rabies as a zoonotic disease, and 42.10% demonstrated satisfactory knowledge of rabies. Knowledge was associated with the gender, education, and income level of the respondents. Some people used traditional medicine such as goat weed and turmeric powder as immediate first aid management of animal bites, and some others went to traditional healers for treatment. At the same time, few pet owners had not vaccinated their pets. The findings highlight the importance of targeted educational interventions to enhance rabies awareness and emphasize the potential of effective awareness campaigns to save lives.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/zoonoticdis3030017/s1, Table S1: Socio-demographic characteristics of community people of Bharatpur Metropolitan city-12, Chitwan (n = 271).

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Informed Consent Statement: The study's purpose and procedures were thoroughly explained to the respondents before data collection, ensuring their understanding. Strict measures were taken to protect the privacy and confidentiality of the participants. They were informed of their rights to decline participation or withdraw from the study at any point during data collection. Personal identifiers were not recorded, guaranteeing the anonymity of their responses. Verbal informed consent was obtained from the respondents, confirming their approval before data collection.

Data Availability Statement: The raw data from this study can be obtained by requesting it from the corresponding authors.

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