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ORIGINAL ARTICLE

THE KNOWLEDGE AND ATTITUDES OF THE COMMUNITY IN SIBANGKAJA VILLAGE, BADUNG, REGARDING THE RABIES INCIDENT

Pengetahuan dan Sikap Masyarakat Desa Sibangkaja, Badung terkait Kejadian Rabies

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ABSTRACT

Background: The challenges in overcoming the rabies epidemic include the public's lack of knowledge and attitudes regarding the control and first aid in dog bites. Sibangkaja is one of the villages in Badung Regency, which is an endemic area for rabies. **Purpose:** This study aimed to describe the knowledge, attitudes, and factors influencing the behavior of the residents of Sibangkaja Village, Badung, regarding rabies. **Methods:** This descriptive observational study was carried out using a cross-sectional design. The samples were 250 residents of Sibangkaja Village, taken by convenience sampling. Data were collected from February to March 2020 through interviews using the digital questionnaire. The variables were knowledge and community attitudes toward rabies vaccination in the village. **Results:** The results showed that the respondents' knowledge was good, but 34% did not know the symptoms of rabies. It was discovered that attitudes toward rabies prevention and management are significantly more in favor of vaccination than eliminating dogs. Furthermore, there is an association between knowledge and dog ownership on people's attitudes (p-value=0.01). **Conclusion:** Information and education about the symptoms of rabies is needed for residents to exercise caution and pay more attention to themselves and the surrounding dogs.

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ABSTRAK

Latar Belakang: *Tantangan yang dihadapi dalam mengatasi epidemi rabies antara lain kurangnya pengetahuan dan sikap masyarakat tentang pengendalian rabies dan pertolongan pertama pada gigitan anjing. Desa Sibangkaja merupakan salah satu desa di Kabupaten Badung dimana Kabupaten Badung merupakan salah satu daerah endemis rabies.* ***Tujuan:*** *Tujuan penelitian ini adalah untuk mendeskripsikan pengetahuan dan sikap warga Desa Sibangkaja Kabupaten Badung tentang Rabies serta faktor yang mempengaruhi sikap masyarakat.* ***Metode:*** *Penelitian ini merupakan penelitian observasional deskriptif dengan desain penelitian cross sectional. Sampel penelitian ini adalah 250 masyarakat Desa Sibangkaja yang diambil secara convinient sampling. Pengumpulan data dilakukan pada bulan Februari-Maret 2020. Metode pengumpulan data menggunakan wawancara yang dilakukan dengan kuesioner digital. Variabel penelitian ini adalah karakteristik social demografi, pengetahuan dan sikap masyarakat terhadap rabies di Desa Sibangkaja.* ***Hasil:*** *Hasil penelitian menunjukkan bahwa pengetahuan responden tentang rabies baik, namun 34% masyarakat Desa Sibangkaja tidak mengetahui gejala rabies. Sikap terhadap pencegahan dan manajemen rabies sebagian besar mendukung vaksinasi daripada eliminasi anjing.Terdapat pengaruh pengetahuan dan kepemilikan anjing terhadap sikap masyarakat.* ***Kesimpulan:*** *Diperlukan informasi dan edukasi mengenai gejala rabies agar warga dapat lebih berhati-hati dan lebih memperhatikan diri sendiri dan anjing di sekitarnya.*

INTRODUCTION

Rabies is a global health problem and an endemic in almost all continents except Antarctica. The prevalence is severe in Asia because it can significantly impact animal welfare, the economy, and human health. It was also reported that there are approximately 39,000 human deaths annually. Domesticated dogs are the main reservoir and source of rabies (1). Generally, rabies is a disease caused by warm-blooded carnivores such as dogs, cats, wolves, monkeys, and bats transmitted to humans through bite or lick (2). Based on a retrospective study, Indonesia experienced the first disease outbreak in 1884 in West Java. The next occurrence was reported in 1953 in Central Java, East Java, and West Sumatra, followed by North Sumatra in 1956. Meanwhile, in early 2019, it spread to 26 provinces, which include Nanggroe Aceh Darussalam, North Sumatra, West Sumatra, Riau, Riau Islands, Jambi, South Sumatra, Bengkulu, Lampung, Banten, West Java, Bali, East Nusa Tenggara, North Sulawesi, Gorontalo, Sulawesi Central, Southeast Sulawesi, South Sulawesi, West Sulawesi, South Kalimantan, East Kalimantan, Maluku, North Maluku, and Central Kalimantan (3).

Rabies in Bali Province was first reported in 2008 in Badung Regency, showing 274,792 cases recorded from May 2008 to July 2015, with an average of 34,349 per year (SD.27638.11, 95% CI 18273.60 to 56251.07) or 95 cases per day (4). The dog population in the province is relatively high because it relates to cultural aspects as guardians of houses/agricultural land/plantations, and ceremonial facilities (5).

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Zahrotunnisa et al (6) stated that Sibangkaja Village in Badung Regency is one of the endemic areas for rabies. This disease mainly occurs in 80% of poor rural communities, with minimal awareness and access to treatment facilities (7). Although mass vaccination can

prevent the disease, it is a public health burden in developing countries without the technical and financial resources to control rabies in the animal population (8).

Some challenges faced in overcoming the rabies epidemic in Bali include the lack of knowledge and public attitudes regarding the control and first aid in cases of dog bites (9). Knowledge, attitudes, and behavior are theories widely used globally for various applications in public health. This was based on the principle that increased knowledge will change attitudes and behavior to minimize disease burden (10). Therefore, this study aims to identify the knowledge and attitudes of the Sibangkaja village community regarding the incidence of rabies.

METHODS

This descriptive observational study was carried out using a cross-sectional design. The population included 250 residents in Sibangkaja Village, selected using convenience sampling. Data were collected from February to March 2020 using a digital questionnaire. The independent variables used were socio-demographic characteristics consisting of age, sex, education level, monthly income, and dog ownership. Meanwhile, the knowledge variable consisted of three questions answered correctly and incorrectly. The questions included when the rabies vaccine was given, symptoms, and steps to take when bitten by a dog, as well as attitudes towards vaccination and elimination. A score of 1 is given to the correct answer, while the incorrect is 0, and the total score of the three knowledge indicators is 3. Knowledge is categorized based on the median value into good and poor, with a score range of 2-3 and 0-1, respectively.

The dependent variable is attitudes, measured by four statements, including people's attitudes about dog elimination and vaccination. Each statement is measured by a Likert scale of 1-5, indicating Strongly Disagree-Strongly Agree. The maximum total score of the four indicators is 20.

In this study, the data collected were analyzed using univariate and bivariate. Univariate analysis was conducted to obtain the distribution of the results of the variables in the form of descriptive statistics, namely frequency, percentage, mean, and standard deviation. Meanwhile, bivariate analysis was carried out with linear regression analysis to determine the association between knowledge and socio-demographic characteristics with the dependent variable, namely attitudes about rabies. The bivariate analysis showed a significant relationship when the p-value was <0.05. Furthermore, this study has received ethical approval No. 759/UN 14.2.2.VII.14/LT/2021 from the Research Ethics Commission of the Faculty of Medicine, Udayana University/ Sanglah Hospital, Denpasar.

RESULTS

The results showed that out of the 250 respondents, 94% were male, and the average age was 47, whereas the youngest and oldest were 20 and 80, respectively. Based on the highest level of education completed, most respondents were senior high school students, and the income level was in the range of 1,500,001–2,500,000, as shown in Table 1. Furthermore, almost 55% of residents have a dog, while 45% do not.

Table 2 shows respondents' knowledge about the period of rabies vaccination, the symptoms, and the steps to take when bitten by a dog. It was discovered that 61.6% know that the rabies vaccine should be given to dogs annually, while 38.2% do not know. Furthermore, 34.4% admitted that they did not know the symptoms of rabies, and some knew that the first step was to wash the wound with soap and water after being bitten by a dog. The level of knowledge of Sibangkaja village, according to the median score, which was 54.00%, indicated that most respondents have good knowledge about rabies.

Table 3 shows respondents' attitudes regarding vaccination and eliminating rabies. Approximately 40.8% agreed that mass elimination should be carried out even though only one dog in the banjar/area showed symptoms of rabies, and 29.2% did not agree. Furthermore, 64.40% agreed with eliminating dogs with symptoms, while nearby dogs only needed vaccination. Most 69.60% of respondents also preferred vaccination over elimination and agreed that vaccinated dogs protect the surrounding community.

Table 1
Respondents' Socio-Demographic Characteristics

Demographic Characteristics	f	%
Sex		
Male	235	94.00
Female	15	6.00
Age (Mean ± SD)	47.39 (11.20)	
Education		
No School/No Elementary School	9	3.60
Elementary School	24	9.60
Junior High School	30	12.00
Senior High School	125	50.00
Diploma	16	6.40
Bachelor	46	18.40
Monthly Income (IDR)		
< 750,000	14	5.60
750,001-1,500,000	72	28.80
1,500,001-2,500,000	87	34.80
2,500,001-3,500,000	45	18.00
3,500,001-4,500,000	22	8.80
> 4,500,001	10	4.00
Dog Ownership		
Owned dog	137	54.80
Do not have a dog	113	45.20
Total	250	100.00

Table 2
Knowledge about Rabies

Knowledge	f	%
When Can Dogs Obtain Rabies Vaccine		
Only when they are bitten by another dog	1	0.40
every 6 months	1	0.40
Each month	4	1.60
Every year	154	61.60
Depends on the Government/Service program	1	0.40
Never, not essential to vaccinate dog	1	0.40
Do not know	88	35.20
Symptoms of Rabies		
Changes in the dog's nature or attitude	47	18.80
Dog is aggressive or attack without provocation	38	15.20
Dog is afraid or avoids light	48	19.20

(Continue)

Table 2
Continued

Knowledge	f	%
Jaw or tongue down	22	8.80
Fear or avoid water	11	4.40
Do not know the symptoms of rabies	86	34.40
What to do when bitten by a dog		
Wash the wound	46	18.40
Wash the wound with running water	99	39.60
Wash the wound with soap and water	131	52.40
Wash the wound for 15 minutes	95	38.00
Give iodine/betadine	40	16.00
Take it to the clinic or hospital	85	34.00
Get vaccinated	4	1.60
Do not know what to do	27	10.80
Total	250	100.00

Table 3
Attitudes towards Rabies Prevention and Control

Attitudes	f	%
Mass elimination must be carried out in the banjar even though there is only 1 dog showing symptoms of rabies		
Strongly agree	27	10.80
Agree	102	40.80
Neutral	45	18.00
Do not agree	73	29.20
Strongly Disagree	3	1.20
When there is a dog in my banjar that shows symptoms of rabies, only that dog is eliminated, while the others are vaccinated		
Strongly agree	58	23.20
Agree	161	64.40
Neutral	30	12.00
Do not agree	1	0.40
Vaccinated dog keeps people safe		
Strongly agree	36	14.40
Agree	189	75.60
Neutral	21	8.40
Do not agree	4	1.60

Table 4 shows the association between knowledge and socio-demographic characteristics with attitudes about rabies. Knowledge and ownership of dogs statistically affect attitudes toward rabies prevention related to vaccines and dog elimination ($p<0.05$). The coefficient B in the linear regression analysis stated that as knowledge improves, the predictive model will increase public attitudes towards rabies prevention by 0.8 times.

Table 4
Association between Knowledge and Socio-Demographic Characteristics with Attitudes about Rabies

Variable	Attitudes		*p-value*	B (95% CI)
	Mean	SD		
Age (years old)				
<47	19.51	2.14	0.60	-0.03
≥47	19.37	1.92		-0.64 – 0.37
Sex				
Male	19.40	2.02	0.27	0.07
Female	20.00	2.17		-0.47 – 1.66
Education				
No High School Diplomas	19.67	2.17		
High School Diploma	19.28	2.06	0.68	-0.07
College Degree	19.52	1.83		-0.44 – 0.28
Monthly Income			0.90	-0.04
≤ IDR 2,500,000	19.45	2.12		
>IDR 2,500,000	19.42	1.84		-0.59 – 0.514
Dog Ownership				
Do not have a dog	18.84	1.92	0.01	1.09
Owned dog	19.93	1.99		0.60- 1.58
Knowledge				
Poor	19.03	1.88	0.01	0.767
Good	19.79	2.09		0.26 – 1.27
Total	19.44	2.03		

DISCUSSION

Rabies is a disease caused by animals such as dogs and is transmitted to humans through the bite or lick of a rabid animal (11). This study showed that the people's knowledge in Sibangkaja Village, Badung, is quite good. The results indicated that 61.60% are aware of vaccination to prevent rabies. The types of vaccines commonly used are Rabivax, Rabipur and Rabivet, and Nabivac (12). This is in line with Kristina (13), which stated that rabies prevention can be carried out by giving rabies vaccine to pets once a year. This is because administering the anti-rabies vaccine provides immunity for the animal to become resistant to infection.

A total of 34.40% did not know the symptoms of rabies. Moreover, the symptoms can be divided into three stages: the prodromal, which usually lasts 2-3 days; excitation; and paralysis. In the prodromal stage, the animal usually does not know its master, often avoids, ignores orders, is easily surprised, and quickly rebels when provoked. There is also an increase in body temperature, pupillary dilation, and decreased corneal reflexes to stimuli (14).

The excitation stage is characterized by the animal hiding under the bed, a table, or a chair. Furthermore, the dog looks restless, and there are hallucinatory movements and acts like eating insects that fly in the air. When a dog is in the cage, it will walk back and forth while growling. The behavior develops more sensitive and violent and will attack all moving objects. The mouth often bleeds from missing teeth or chewing hard, sharp objects, and a change in the voice. Stiffness of the swallowing muscles can occur to allow hypersalivation, the frequency of breathing changes rapidly, and the saliva is foamy, sometimes accompanied by blood from wounds in the gums or mouth. The paralysis stage is characterized by paralysis of the masticatory muscles, making the jaw appear to hang. The dog's voice is often like choking due to paralysis of the

throat muscles. There is paralysis of the hind legs, which are dragged when walking (8).

The first treatment when a person is bitten by an animal that causes rabies is to immediately wash the bite wound with clean water and soap or detergent for 5-10 minutes. Subsequently, rinse the wound with running water and dry it with a clean cloth or tissue paper. Red medicine can be given to the wound, covered with a clean bandage, and the patient is immediately taken to the nearest hospital for further treatment (15). An anti-rabies substance, Human Rabies Immunoglobulin = HRIg, is administered to the bite wound, followed by a rabies vaccine on the other side to stimulate the body's active anti-rabies formation.

Bite wounds are not allowed to be sutured except for situational sutures. When stitches are necessary, Anti-Rabies Serum (SAR) is given according to the dose, infiltrating around the wound, and the rest is injected intra-muscularly (16). Furthermore, administering anti-tetanus serum/vaccine, antibiotics to prevent infection, and analgesics should also be considered.

Attitudes of Sibangkaja residents prefer vaccination as a form of rabies prevention. It was discovered that mass vaccination of dogs is needed to stop the cycle of transmission of rabies from animals to humans. According to WHO, vaccination coverage must reach at least 70% of the dog population to break this cycle (17). Vaccination also has a chance of failing to prevent rabies due to several factors, namely the quality of the vaccine, poor handling (wrong cold chain), expiration of immune period based on the type of vaccine used, the incubation period of dogs, and individual response (18). However, the transmission of the disease can stop when dog owners realize the importance of vaccinating their pets, specifically dogs (19).

Prevention of rabies by vaccination can save treatment costs due to bites and reduce the incidence of bites among the human population (20). The One Health Concept approach is based on the idea that closer cooperation between veterinary and human health services can create added value for both sectors. Rabies is one of the best examples to illustrate the positive effects of this collaboration to control disease (21). Alam et al. (22) also stated that a form of this concept is dog mapping because reducing stray dogs and strengthening vaccinations will minimize rabies transmission and protect humans.

Research Limitations

This study is limited to several aspects of community knowledge and attitudes toward the incidence of rabies. In the future, further investigation is recommended on the factors that influence the knowledge and attitudes, as well as the community's behavior in preventing and controlling rabies in their area to minimize the burden of the disease.

CONCLUSION

Knowledge and ownership of dogs affect people's attitudes toward rabies prevention related to vaccines and dog elimination. The results indicated that most respondents' knowledge about rabies is good. However, there is still a need for detailed information and education about the symptoms. This aims to make residents careful and pay more attention to themselves and the surrounding dog. Attitudes towards the prevention and management of rabies are good due to more support for vaccination than elimination. Meanwhile, it is necessary to increase knowledge about the prevention and management of the disease, which will affect the changing of attitudes and behavior to minimize the rabies problem in Sibangkaja Village.

CONFLICT OF INTEREST

There were no conflicts of interest during this study, from finance, licensing, and data collection to preparing reports.

AUTHOR CONTRIBUTIONS

Authors' contributions include PEP conceptualization, Methodology, Software, Writing, Original draft preparation, SGP Data curation, MS, IBNS, HI Visualization, Investigation, JG Supervision, AK Software, WAU, KKA Writing, Reviewing, and Editing.

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