

ORIGINAL RESEARCH

CORRELATION BETWEEN DOG OWNER KNOWLEDGE AND THE ROLE OF HEALTH WORKERS IN PREVENTING RABIES IN AMBON CITY

Hubungan Antara Pengetahuan dan Peran Petugas Kesehatan Terhadap Pencegahan Rabies Di Kota Ambon

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ABSTRACT

Background: Rabies is a zoonotic disease that can cause death. Ambon City is a city in Indonesia with a fairly high dog population of 62,613; we found 3,444 bite cases and 747 positive results from dog brain specimens between 2014 and 2018. **Purpose:** The aim of this study was to examine the correlation between the knowledge of dog owners and the role of health workers in preventing rabies in Ambon City. **Method:** This research used a quantitative design within a cross-sectional study. There were two groups of respondents: the dog owner population and the health worker population. The population of dog owners was 4,509 and the sample was 113. The health worker population and sample size was 22. The research began with the preparation, implementation, and writing stages. The data sources were both primary and secondary. Primary data were obtained at the time of the study and secondary data were obtained from the Ambon City Health Office, Ambon City Agriculture and Food Security Service, and Ambon City Health Centers. **Results:** There was a relationship of statistical significance between dog owner knowledge and rabies prevention ($p = 0.01$) and a significant relationship between the role of health workers and rabies prevention ($p = 0.03$). **Conclusion:** Dog owner knowledge and the role of health workers have a relationship with efforts to prevent rabies.

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ABSTRAK

Latar Belakang: Rabies adalah penyakit zoonosis yang dapat menyebabkan kematian. Kota Ambon merupakan salah satu kota di Indonesia dengan populasi anjing cukup tinggi yaitu sebanyak 62.613 dan ditemukan 3.444 kasus gigitan dan spesimen positif sebanyak 747 spesimen otak anjing pada tahun 2014-2018. **Tujuan:** Penelitian ini bertujuan untuk melihat hubungan pengetahuan pemilik anjing

dan peran petugas kesehatan terhadap upaya pencegahan rabies di Kota Ambon. Metode: Penelitian ini merupakan penelitian kuantitatif dengan desain studi cross sectional. Terdapat dua kelompok responden yang diteliti yaitu kelompok pemilik anjing dan petugas kesehatan. Populasi pemilik anjing sebanyak 4.509 dengan sampel sebanyak 113. Pada kelompok petugas kesehatan dilakukan penelitian pada total populasi kelompok tersebut yaitu sebanyak 22. Sumber data penelitian adalah data primer dan data sekunder. Data primer didapatkan dari hasil wawancara dan data sekunder bersumber dari Dinas Kesehatan Kota Ambon, Dinas Pertanian dan Ketahanan Pangan Kota Ambon, dan Puskesmas se-Kota Ambon. Variabel yang diteliti pada kelompok pemilik anjing meliputi pengetahuan tentang penyakit rabies, dan sikap atau tindakan pencegahan rabies. Variabel yang diteliti pada kelompok petugas kesehatan meliputi karakteristik, sikap atau tindakan pencegahan rabies. **Hasil:** Uji analisis statistik menunjukkan bahwa upaya pencegahan rabies memiliki hasil yang signifikan dengan pengetahuan pemilik anjing (p value = 0,00) dan peran petugas kesehatan (p value = 0.03). **Kesimpulan:** Pengetahuan pemilik anjing dan peran petugas kesehatan berhubungan dengan upaya pencegahan rabies.

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INTRODUCTION

Rabies is a zoonotic disease that is transmitted to humans through the bites and licking of animals that can carry rabies (hewan pembawa rabies, HPR), such as dogs, cats, monkeys, and bats. This disease attacks the central nervous system and has the potential to cause death if not treated immediately (Dibia, Sumiarto, Susetya, Putra, & Scott-Orr, 2015; Nugraha, Batan, & Kardena, 2017; Salam, 2018; Suardana, Winaya, Dewi, Sudarmayasa, & Agustina, 2019; Suatha et al., 2015). Rabies is a deadly infectious disease caused by rhabdovirus (Indrawan, Batan, & Kardena, 2016; Mau & Yunarko, 2015). This virus is 180nm in length and 75nm in width. The rabies genome has five types of proteins—nucleoprotein (N), phosphoprotein (P), matrix protein (M), glycoprotein (G), and polymerase (L) This virus has characteristics of 180 nm length and 75 nm width. The rabies genome has 5 types of proteins namely Nucleoprotein (N), Phosphoprotein (P), Matrix protein (M), Glycoprotein (G), and Polymerase (L) (Wibowo et al., 2015). All rhabdoviruses have a structural component called the helical ribonucleoprotein core (RNP) and a surrounding sheath. In the structural component of the RNP, RNA is attached by a nucleoprotein. The average glycoprotein

consists of 400 trimeric spikes attached to the surface of the virus (Astawa, Kencana, & Suardana, 2017; Singh et al., 2017).

Symptoms of rabies in humans and animals are different. Symptoms in humans are divided into four categories—prodromal, sensory, excitation, and paralysis, while the symptoms of rabies in animals are divided into three categories—prodromal, sensory, and paralysis (Mau & Yunarko, 2015).

Rabies is a very dangerous disease because it can cause death four to six days after signs of the disease first appear. When bitten by a rabies suspect, several actions that should be taken are washing the wound with soap or detergent in running water for 10-15 minutes and giving 70% alcohol and iodine medicine. The wound should not be sewn unless at risk of further infection. If the rabies suspect animal dies under observation, the bite victim must be immediately given complete treatment with an anti-rabies vaccine (VAR) injection (Rampengan, 2017).

Rabies is found in most countries in the world and is endemic in 72 countries. Around 55,000 people die from rabies each year. More than 15 million people who have been bitten by animals that can carry rabies have received prophylactic treatment, the VAR, to prevent the onset of rabies. Most bites from rabies-transmitting animals are

observed in children under 15 years of age (Marlessy, Kaunang, & Rattu, 2019; Utomo, Sudarnika, & Lukman, 2018).

Rabies in Indonesia was first reported by Eseer in 1886, in West Java, and was found in buffaloes (Sarjana, Prasetyawati, & Budiani, 2015). In 1894, de Hann reported the incidence of rabies in humans (Mohan, 2015). The spread of rabies in Indonesia occurred before World War I and was found in three provinces—West Java, North Sumatra, and South Sulawesi (Affandi et al., 2015; Mau & Yunarko, 2015). In February 2011, there were 122 rabies fatalities in Bali. The majority of patients were aged between 41 and 50. In July 2015, there were 160 patients who died of rabies in Landih Village, Bangli, Bali (Batan & Suatha, 2016).

Rabies cases were discovered in Maluku Province on August 28, 2013. Bite cases first appeared in the working areas of the Lateri Health Center and the Urmesing Health Center. The dog population in Ambon City from 2014 to 2018 was 62,613, of which 50,128 had been vaccinated. The accumulation of vaccination activities for rabies-carrying animals from 2014 to 2018 was 80%. Various efforts have been made by government agencies, but there is still an increase in bite cases. Based on laboratory examination, the majority of specimens examined have positive rabies results. One of the intervention efforts involved providing education through counseling to all parties, by the government, Maluku Provincial Health Office, Ambon City Agriculture Office, and Ambon City Agriculture and Food Security Service (Agriculture and Food Security Service of Ambon City, 2018). The number of bite cases found between 2014 and 2018 in Ambon City was 3,444. Of these, 2,232 were given VAR injections and 13 people died. 747 positive dog brain specimens were examined (Ambon City Health Office, 2018).

The actions of health workers and the community in preventing rabies are influenced by motivation, coordination, and communication. Based on preliminary observations carried out in February 2019, it appears that health workers are motivated to conduct rabies prevention tasks, such as treating patients with rabies-borne animal bites and providing information in the form of education about rabies. Motivation is not the only strategy needed to make a change in health behavior. Coordination is also needed to conduct a program to achieve the desired goals and communication is also one of the strategies needed to make changes in health behavior (Notoatmodjo, 2012).

Research conducted by Nurrohman, Batan, & Kardena (2017) explained that the participation of respondents in rabies counseling was minimal. The study also showed that 78% of village respondents who had not yet reported rabies cases in their village knew the dangers and characteristics of rabid dogs. The participation rate in rabies counseling was 29%. The aim of this study is to examine the correlation between the knowledge of dog owners and the role of health workers in rabies prevention in Ambon City in 2019.

METHOD

This research is a quantitative study with a cross-sectional study design. There were two groups of respondents—dog owners and health workers. The population of dog owners in this study was 4,509; the health worker population in Ambon City was represented by one worker from 22 health centers (Puskesmas). The sample of dog owners in this study was 113, while the number of health workers studied was 22, from the 22 health centers in Ambon City (total sampling) that conducted the rabies program.

Data collection was carried out on June 14 until August 14, 2019. The data collected was both primary and secondary. Primary data came from interviews, while secondary data came from the Health Office and the Agriculture and Food Security Office of Ambon City. Data analysis was conducted using chi-square testing. Data analysis was divided into two parts—a univariate analysis and a bivariate analysis. The univariate analysis was used to examine the characteristics of both dog owners and health care workers (gender and research variables). The bivariate analysis was used to determine the relationship between the dependent and independent variables, with an α value of 0.05 and a 95% confidence level.

Variables in this study included dog owner knowledge of rabies and their attitude towards or measures used for preventing rabies. Health worker variables included their characteristics and their attitude towards or measures used for preventing rabies. Knowledge indicates how much the dog owners understand about rabies, including what is meant by rabies, rabies symptoms, and how to prevent rabies. Knowledge can be increased by providing education about rabies. The role of the health workers was based on three aspects—motivation, communication, and coordination. The role of the health workers was assessed using a questionnaire consisting of five motivational questions, five communication

questions, and six coordination questions. The three aspects were combined for a total score. The role of health workers was classified as inactive if the questionnaire score was less than 22 and active if the score was 22 or more.

RESULTS

Characteristics of Respondents

The majority of respondents in the dog owner group were female (62 respondents, 54.90%), tried to prevent rabies (67 respondents, 59.30%), and had good knowledge of rabies (59 respondents, 52.20%; see Table 1). The majority of respondents in the health worker group were female (17 respondents, 77.30%), put effort into preventing rabies (12 respondents, 55.00%), and played an active role in preventing rabies (14 respondents, 63.60%; see Table 2).

Table 1
Characteristics of Dog Owners

Dog Owners	n	%
Gender		
Male	51	45.10
Female	62	54.90
Rabies Prevention		
Not Good	46	40.70
Good	67	59.30
Knowledge		
Poor	54	47.80
Good	59	52.20
Total	113	100.00

Table 2
Characteristics of Health worker Respondents

Health Workers	n	%
Gender		
Male	5	22.70
Female	17	77.30
Rabies Prevention by Health Workers		
Not Good	10	45.00
Good	12	55.00
Role of Health Workers		
Inactive	8	36.40
Active	14	63.60
Total	22	100.00

The results show that knowledge has a significant correlation with efforts to prevent rabies, with a p-value of 0.01. This result also shows that dog owners with less knowledge about rabies are eight times more at risk of undertaking

poor rabies prevention efforts, compared to dog owners with good knowledge.

The results show that the role of health workers has a significant correlation with efforts to prevent rabies, with a p-value of 0.03. It can also be concluded that health workers who do not play an active role at carrying out efforts to prevent rabies 7.50 times more at risk compared to health workers who played an active role (Table 4).

DISCUSSION

Correlation between Knowledge of Rabies and Rabies Prevention Efforts

Knowledge is a factor that can influence a person's behavior. This study shows that there is a significant correlation between knowledge and the prevention of rabies. This is in line with research conducted by Tahulending, Kandou, & Ratag (2015), who found, based on the results of statistical analysis, that knowledge has a p-value of 0.01, meaning there is a significant correlation between knowledge and the prevention of rabies. Respondents with less rabies knowledge are 30.64 times more at risk of failing to prevent rabies compared to dog owners with good knowledge.

The lack of rabies knowledge in dog owners is due to lack of exposure to information about the disease. This is supported by several statements from the respondent dog owners, who reported that they had never attended socialization classes about rabies and had never heard about the socialization activities. This is the opposite to the interviews conducted with the health workers, who stated that they had conducted socialization activities both inside and outside the health center (Puskesmas), such as during posyandu (center for pre- and post-natal healthcare) activities, in churches, at village activities, and at other times. This is in line with research conducted by Wicaksono, Ilyas, Sudarnika, Lukman, & Ridwan (2018) who found that 80 of 141 respondents did not receive information about rabies (56.70%).

The results of this study are opposite to the research of Parwis et al (2016) who found that all respondents had heard of rabies or "mad dogs". Another study explained that the participation of respondents in 14 villages in rabies counseling conducted by government agencies was very minimal, but the majority of respondents already knew about rabies (89.30%) and knew the characteristics of rabid dogs (77.10%; Suwartama, Batan, & Agustina, 2018).

Table 3

Correlation between Rabies Knowledge and Rabies Prevention Efforts

Knowledge of Rabies	Prevention of Rabies				<i>p</i> <i>value</i>	OR 95%CI
	Not Good		Good			
	n	%	n	%		
Less	35	68.80	19	35.20	0.01	8.03 (3.39-19.10)
Good	11	18.60	48	81.40		
Total	46	40.70	67	59.30		

Table 4

Correlation between the Role of Health Workers and Rabies Prevention Efforts

The Role of Health Workers	Prevention of Rabies				<i>p</i> <i>value</i>	OR 95%CI
	Not Good		Good			
	n	%	n	%		
Inactive	6	75.00	2	25.00	0.03	7.50 (1.03-54.11)
Active	4	28.60	10	71.40		
Total	10	45,50	12	54,50		

Research conducted by Nurrohman et al (2017) explains that 78% of respondents in villages where cases of rabies had not been reported knew the dangers and characteristics of rabid dogs and had a rabies counseling participation rate of 29%. These results were slightly better compared to villages where cases of rabies had been reported, with 70% of respondents understanding the dangers and characteristics of rabid dogs and 22% participating in rabies counseling.

Research conducted by Sarjana, Prasetyawati, & Budiani (2015) found that the level of rabies knowledge has a significant correlation with rabies prevention measures, with a *p*-value of 0.01. These results are opposite to research conducted by Dibia, Sumiarto, Susetya, Putra, & Scott-Orr (2015), who found that the incidence of rabies has no relationship with a general understanding of the danger of rabies (*p* = 0.12; OR = 2.58; 95% CI = 0.75-8.92) and with active participation in rabies counseling (*p* = 0.64; OR = 1.17; 95% CI = 0.59-2.20).

Correlation between the Role of Health Workers and Rabies Prevention Efforts

Public services basically cover aspects of the life of the wider community. Health centers are the focal point of health services and development in districts and cities, so special attention is needed for their quality. Health centers (Puskesmas) provide holistic and inexpensive integrated treatment and healing services. The health care system is divided into two types—individual health efforts and public health efforts. Health

services are divided into medical services and community health services (Notoatmodjo, 2011).

Ambon City is the capital of Maluku Province. The number of health centers (Puskesmas) in Ambon City is 22, with one in each subdistrict. Based on bivariate statistical analysis, there is a significant relationship between the role of health workers (including motivation, communication, and coordination) and rabies prevention efforts.

Health workers play an important role in preventing and controlling health problems in the community, with one of these roles being to provide health information. Public health workers are human resources who are very involved in the National Health System or Sistem Kesehatan Nasional (SKN). Health development aims to increase community independence in maintaining health through a higher awareness of the importance of promotive and preventive health services (Mubarak & Suslia, 2012).

The aim of promotive services is to increase the independence and participation of the community in health development. A tiered and continuous education and socialization program is needed so that community independence in health development is achieved (Mubarak & Suslia, 2012). Research conducted by Marlessy, Kaunang, & Rattu (2019) showed that 20 out of 50 respondents received support from health workers (40.00%), while 30 respondents did not receive health care support (60.00%). The statistical test shows that there is a significant relationship between support and the level of prevention, with a *p*-value of 0.01. This is opposite to research conducted by Juliansyah & Nurdin (2019), which

found no significant correlation between health services and the prevention of rabies, with a p-value of 0.06.

Research Limitation

There were several obstacles in this study, including the use of the cross-sectional method instead of a case-control or cohort method, as these methods examine the time dimension. Another obstacle in this research was the geographical condition, as the distance between research locations was significant and the natural environmental conditions (rainy season) made it difficult for the research to be completed quickly.

CONCLUSION

The majority of respondents in the dog owner group were female, tried to prevent rabies, and had good knowledge of rabies. The majority of respondents in the health worker group were female, put effort into preventing rabies, and played an active role in preventing rabies. Dog owner knowledge and the role of health workers have a relationship with efforts to prevent rabies.

CONFLICT OF INTEREST

The authors declare that no conflict of interest in this study.

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