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Relationship between Knowledge and Attitude with Behavior of Preventing Leptospirosis in Healthcare Workers at Binjai City

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Abstract. Leptospirosis is an infectious disease caused by spirochete from the genus Leptospira, namely Leptospira interrogans, which is pathogenic for both humans and animals. L. interrogans infection is often came from flooding, which carried from soil contaminated with animal urine reservoirs and settles in water. Leptospirosis is estimated to cause 1030000 cases and 58900 deaths annually in worldwide. Until now, Leptospirosis is still poses a threat to public health as it triggers Extraordinary Events (KLB) in several regions in Indonesia. Leptospirosis outbreaks have been associated with the presence of risk factors, including the high population of rats as reservoirs of Leptospira spp., poor sanitation, and increased numbers in flooded areas in Indonesia. The purpose of this study was to determine the relationship between knowledge and attitude and behavior of preventing Leptospirosis in healthcare workers at Binjai Timur, Binjai City. This study was an analytical study with a cross-sectional design. The study was conducted using a questionnaire tool on knowledge levels, attitudes, and preventive behaviors of Leptospirosis. The results showed the healthcare workers in sub-district Health Center of Binjai Timur, Binjai City had mastered the knowldge and preventing behavior on Leptospirosis patients. Moreover, their attitude on Leptospirosis is good.

Keyword: Leptospirosis, Leptospira Interrogans, Knowledge, Prevention, Attitude

1   Introduction

Leptospirosis is an infectious disease caused by spirochete bacteria of the genus Leptospira [1], namely Leptospira interrogans which is pathogenic in both humans and animals [2]. The morphology of L. interrogans is a spiral shape that is usually tightly coiled, flexible, thin and smooth with a length of 5–15 m and a width of 0.1–0.2 m, and one end is bent like a hook [3]. L. interrogans has a periplasmic endoflagelum which is useful for locomotion. The motility of spirochete bacteria has screw-like characteristics that distinguish it from other bacteria [4]. L.

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interrogans can survive in fresh water and in moist soil for weeks to years, especially at slightly alkaline pH [5], so that L. interrogans can be isolated from river water, lake water, puddles. water, water dams, springs, freshwater fountains, sewage, agricultural land and moist soil [6]. Rats are the main reservoir and carrier for Leptospirosis because they can be infected with asymptomatic L. interrogans and excrete the bacteria when urinating [7]. In addition, rats have high reproductive power, predominantly Norwegian/brown rats (Rattus norvegicus) and black rats (Rattus rattus) so they are commonly found in urban environments [8].

L. interrogans enters the human body from environmental reservoirs through wounds, abrasions, or mucous membranes [9], causing Leptospirosis which can be in two phases, namely (i) mild anicteric phase or (ii) icteric phase [10]. In the mild anicteric phase, infected people will experience non-specific symptoms in the form of acute fever, weakness, cough, chest pain, abdominal pain, vomiting, chills, shortness of breath, headache especially in the frontal area, lymphadenopathy, myalgia confined to the back, thigh or calf muscles, arthralgia and symptoms such as atypical meningitis, meningeal irritation, heart failure or bleeding (from intestines, lungs, etc.) [11]. Patients with a mild anicteric phase can recover on their own without treatment [12], while in the icteric phase, the main symptom is anuria or oliguria that indicates an infection in the liver or kidneys [13]. L. interrogans are dangerous for humans because they can cause pulmonary bleeding, kidney failure, heart failure and arrhythmias due to myocarditis [14].

L. interrogans infection is often associated with flooding, where L. interrogans is carried from soil contaminated with animal urine reservoirs and deposited in water [15]. Leptospirosis occurs after heavy rains or floods in endemic areas, especially areas with dense residential conditions and poor sanitation [1]. Several areas in Indonesia are endemic areas for Leptospirosis. In several major floods that hit big cities in Indonesia (around 2001-2006), the incidence of Leptospirosis increased significantly so that it became the subject of news in the mass media [16]. This is relatively different from the years before the millennium era where Leptospirosis was less well known to the public, even though Leptospirosis was described by Adolph Weil in 1886 [17]. Therefore, Leptospirosis is called the re-emerging infectious disease [18].

Leptospirosis is estimated to cause 1030000 million cases and 58900 deaths annually worldwide [19]. In 2019 there were 920 cases of Leptospirosis in Indonesia, with 122 deaths caused by the disease [20]. In 2011 there were 857 cases with 82 deaths due to extraordinary events (KLB) in the Special Region of Yogyakarta (DIY) [21]. In 2016 there were 164 cases of Leptospirosis in Central Java Province and 30 of these cases were reported to have died [22]. Leptospirosis is avoided with counseling in the form of recognizing potentially contaminated soil and water, eradicating rodents (rats), separating infected pets, immunizing livestock and pets, covering

wounds and abrasions with waterproof dressings [7]. The research report in Demak District, Central Java explained that knowledge and behavior to prevent Leptospirosis were still not good [23].

2   Methodology

The target population in this study were all Health Officers of the Sub-district of Binjai Timur, Binjai City, amounting to 71 people. The sampling technique in this study was carried out using a total sampling technique. The number of Health Officers at the Sub-District Health Center of Binjai Timur, Binjai City is 71 people. The sample size is 71 people. This research was conducted at the Sub-District Health Center of Binjai Timur, Binjai City. Collecting research data was from 13 September 2021 to 18 September 2021. The research was approved by The Health Research Ethical Committee of Faculty of Medicine Universitas Sumatera Utara. Written informed consent was obtained prior to the investigation.

3   Results and Discussion

The age of the respondents in the interval of 30-58 years was spread over four sub-health centers with a total of 71 people. The following is Table 1 which shows the data on the distribution of respondents by age.

Table 1 Frequency Distribution of Respondents by Age

Age	Frequency	Percentage (%)
30-34 years	4	5.6
35-39 years	15	21.1
40-44 years	15	21.1
45-49 years	19	26.8
50-54 years	12	16.9
55-59 years	6	8.5
Total	**71**	**100**

The most age is found in the range of 45-49 years, which is 19 people (26.8%) and the most minor age is found in the range of 30-34 years, which is 4 people (5.6%).

Table 2 Frequency Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Man	12	16.9

Woman	59	83.1
Total	**71**	**100**

Table 2 above shows that 12 respondents (16,9%) were male and 59 respondents (83,1%) were female.

Table 3 Distribution of the frequency of knowledge of healthcare workers at the Sub-district of Binjai Timur Sub-district, Binjai City on Leptospirosis

Knowledge Level	Frequency	Percentage (%)
Good	67	94.4
Intermediate	4	5.6
Poor	0	0
Total	**71**	**100**

Based on Table 3 above, it can be seen that the number of respondents in the medium category was 4 people (5.6%) while in the good category there were 67 people (94.4%). Nothing is included in the low category. It is clear that the level of knowledge of healthcare workers at the Sub-district of Binjai Timur, Binjai City on Leptospirosis is quite good.

Table 4 Distribution of the frequency of attitudes of healthcare workers at the Sub-district of Binjai Timur Sub-district, Binjai City towards Leptospirosis

Attitudes	Frequency	Percentage (%)
Good	62	87.3
Intermediate	9	12.7
Poor	0	0
Total	**71**	**100**

Based on Table 4 above, it can be seen that the number of respondents in the medium category was 9 people (12.7%) while in the good category there were 62 people (87.3%). Nothing is included in the low category. Based on the results obtained, it is clear that the attitude of the healthcare workers of the Sub-district of Binjai Timur, Binjai City towards Leptospirosis is quite good.

Table 5 Distribution of the frequency of leptospirosis prevention behavior among healthcare workers at the Sub-District Health Center of Binjai Timur, Binjai City towards the prevention of Leptospirosis

Behavior of Preventing	Frequency	Percentage (%)
Good	64	90.1

Intermediate	7	9.9
Poor	0	0
Total	**71**	**100**

Based on Table 5 above, it can be seen that the number of respondents in the medium category was 7 people (9.9%) while in the good category there were 64 people (90.1%). Nothing is included in the low category. Based on the results obtained, it is clear that the preventive behavior of healthcare workers at the Sub-district of Binjai Timur, Binjai City, towards the prevention of Leptospirosis is quite good.

Table 6 The relationship between respondents' knowledge and prevention behavior

	Behavior of Preventing								
Knowledge	**Good**		**Intermediate**		**Poor**		**Total**		**P**
	n	%	n	%	n	%	n	%	
Good	64	90.14	3	4.23	0	0	67	94.37	
Intermediate	0	0	4	5.63	0	0	4	5.63	0.001
Poor	0	0	0	0	0	0	0	0	
Total	64	90.14	7	9.85	0	0	71	100	

From Table 6 above, it was found that respondents with good knowledge and preventive behavior against Leptospirosis were 64 people (90.14%) followed by those who had good knowledge with moderate preventive behavior as many as 3 people (4.23%) then 4 people (5.63%) have moderate knowledge with moderate prevention behavior. There were no healthcare workers at the Sub-district of Binjai Timur, Binjai City, with low knowledge with moderate and low preventive behavior.

Table 7 The relationship between respondents' attitudes and prevention behavior

	Behavior of Preventing								
Attitudes	**Good**		**Intermediate**		**Poor**		**Total**		**P**
	n	%	n	%	n	%	n	%	
Good	60	84.51	2	2.82	0	0	62	87.33	
Intermediate	4	5.63	5	7.04	0	0	9	12.67	0.001
Poor	0	0	0	0	0	0	0	0	
Total	64	90.13	7	9.86	0	0	71	100	

From Table 7 above, it was found that 60 respondents (84.51%) with good preventive attitudes and behavior towards leptospirosis were followed by 2 people (2.82%) who had a good attitude and moderate prevention behavior and then 5 people (7.04%) have a moderate attitude with

moderate prevention behavior and as many as 4 people (5.63%) have a moderate attitude with good preventive behavior. There were no healthcare workers at the Sub-district of Binjai Timur, Binjai City, with a low attitude with moderate and low preventive behavior.

4   Conclusion

This study aims to know the relationship between knowledge and attitude with the preventing behavior of Leptospirosis in healthcare workers at the Sub-District Health Center, Binjai Timur, Binjai City. The result showed that there is a relationship between the level of knowledge and the preventing behavior on Leptospirosis and between attitudes towards Leptospirosis and the preventing behavior on Leptospirosis. The knowledge level, attitude, and prevention behavior of the healthcare workers of the Sub-district of Binjai Timur on Leptospirosis are considered good. The suggestion for healthcare workers to further increase their knowledge about Leptospirosis disease and implement attitudes and behaviors to prevent Leptospirosis, while for educational institutions are expected to cooperate with health parties in distributing information about Leptospirosis, such as helding seminar or webinar on the prevention of Leptospirosis. Last but not least, the results of this study can be used as material for further research with a more diverse population.

Acknowledgement

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