

Evaluation of the Implementation of the Rabies Surveillance System at the Kampung Baru Community Health Center, Medan Maimun

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ABSTRACT

Rabies remains a significant zoonotic disease and a persistent public health challenge in developing countries, making an effective surveillance system essential for early detection, rapid response, and disease control. This study aimed to evaluate the implementation of the rabies surveillance system at the Kampung Baru Community Health Center, Medan Maimun. A descriptive qualitative design was employed using semi-structured interviews with surveillance officers as the primary data source, complemented by a literature review of relevant publications from the last five years. Data were analyzed thematically to identify key patterns related to surveillance implementation, system performance, and operational challenges. The findings indicate that the surveillance system has been implemented effectively through routine weekly reporting, timely case follow-up within 24 hours, and strong coordination across internal programs and external sectors. The system also demonstrates flexibility by providing surveillance and treatment services regardless of patients' residential areas, while maintaining data accuracy and epidemiological monitoring through telephone communication and field visits. However, several challenges remain, particularly low community awareness, misinformation regarding rabies treatment, and refusal to undergo follow-up examinations, which reduce the effectiveness of surveillance and disease control efforts. These findings suggest that although the technical and managerial components of the surveillance system are functioning well, its overall success is strongly influenced by community participation and health literacy. Strengthening health promotion, community empowerment, and multisectoral collaboration through the One Health approach is recommended to enhance the effectiveness and sustainability of rabies surveillance and control at the primary healthcare level.

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1. INTRODUCTION

Surveillance can be defined as a continuous and structured process involving the collection, examination, and interpretation of health data, with the aim of disseminating this information to the relevant authorities for use in disease prevention and control activities(1). Rabies, also known as “mad dog disease,” is a zoonotic disease (transmitted through animals) caused by a virus that attacks the central nervous system, making it a long-term threat to society (2). In Indonesia, the first case of rabies in animals was detected in 1884, followed by cases in humans in 1894 (3). To date, Indonesia still faces major challenges in combating rabies as a developing country in Asia. Rabies poses a serious threat to public health in Indonesia, especially in provinces with high populations of rabies-transmitting animals (RTAs) such as dogs and cats. Given the high fatality rate of this disease, the implementation of an effective surveillance system is crucial for its prevention and control. Rabies is a zoonotic viral disease that affects mammals, including humans, transmitted through bites, scratches, or licks. Prevention involves public education, responsible pet ownership, vaccination, and collaborative efforts among professionals. (4)

In rabies control efforts, surveillance systems play a crucial role. These systems enable the effective identification, reporting, and analysis of new cases in both humans and animals within a very short period of time to immediately break the chain of transmission. Armed with this information, public health initiatives can be developed and implemented with the right strategies. In addition, surveillance also serves to map risks, where the data collected includes not only the condition of the disease itself, but also risk factors and potential exposure used to monitor trends in spread and measure the extent to which the disease has spread in a region. (5)

The rabies surveillance system aims to monitor rabies cases, document animal bite incidents, and manage Anti-Rabies Vaccination (VAR) for patients at risk. Through this surveillance, information regarding patient characteristics, location of occurrence, type of transmitting animal, and time of treatment can be collected and analyzed. Surveillance plays an important role not only in identifying emerging cases, but also in epidemiological mapping, which helps in understanding and preventing the spread of disease. Analysis of disease trends using surveillance data can provide valuable insights into risk factors and potential areas at risk of outbreaks. In addition, the high number of rabies cases, coupled with low vaccination coverage and a lack of public awareness about the importance of vaccinating animals that transmit rabies, are major challenges in controlling this disease. (6,7)

Rabies surveillance includes monitoring and data collection activities from various sources, such as reports of bite incidents, vaccinations, and observations of animals involved in bite cases. With accurate and timely information, stakeholders can take the necessary intervention measures to prevent further cases of rabies. However, various challenges such as limited resources, lack of public awareness of the importance of vaccination, and minimal coordination between the human, animal, and environmental health sectors remain obstacles to the implementation of an effective surveillance system. An efficient surveillance system is crucial for rabies control. Surveillance plays a role in monitoring and collecting information on bite incidents, laboratory testing, and vaccination coverage in animals. With this data, health authorities can identify high-risk groups, monitor transmission patterns, and design the necessary interventions to prevent further spread of the disease. (3,8)

Rabies surveillance in Indonesia faces several fundamental challenges. One of the main issues is the low level of public awareness and understanding of rabies and the risk of transmission. Although rabies is a preventable disease, many individuals are unaware of the importance of vaccinating their pets and taking other preventive measures after being bitten by an animal. (9)

Vaccine availability is a significant challenge. Uneven vaccine distribution in rural areas often hinders the implementation of vaccination programs. In addition, negative stigma towards certain animals can hamper vaccination and population control efforts. Therefore, these challenges require solid collaboration between the government, health institutions, and the community to raise awareness, improve infrastructure, and ensure adequate access to vaccines⁸. The solution implemented in this activity is to strengthen the Communication, Information, and Education (KIE) strategy for the community to increase understanding and awareness of the threat of rabies. Interactive socialization about rabies is carried out so that the community can better understand the transmission process, clinical signs, and appropriate preventive measures (10)

This study aims to evaluate the rabies surveillance system at UPT Puskesmas Kampung Baru, Medan, which is crucial for controlling zoonotic diseases that remain a major issue in developing countries.

2. METHOD

This study uses a descriptive qualitative approach that aims to provide an in-depth description of the implementation of the rabies surveillance system at the Kampung Baru Community Health Center. Primary data were obtained through semi-structured interviews with community health center surveillance officers to determine the reporting flow, case monitoring mechanisms, cross-program coordination, and obstacles encountered in the field. In addition, this study also used literature studies, including journal articles and previous studies conducted in the last five years, as comparative material and to strengthen the analysis. All collected data were then analyzed thematically by identifying patterns, categories, and key issues that emerged from the interviews and literature review.

3. RESULTS AND DISCUSSION

3.1 Result

This study aims to analyze the implementation of the rabies surveillance system at the Kampung Baru Community Health Center (UPT Puskesmas Kampung Baru) through in-depth interviews with surveillance officers at the health center. The focus of this study is to evaluate the attributes of the surveillance system, including simplicity, timeliness, flexibility, data quality, and system stability.

1. Simplicity and Punctuality

Based on interviews, the surveillance reporting process at the Kampung Baru Community Health Center (UPT Puskesmas) is well organized, with reports submitted on a weekly basis. In responding to cases, the health center demonstrated satisfactory performance, implementing a 1×24-hour standard for monitoring or following up directly at the location of the incident. A rapid reporting system response is crucial in prevention, and an effective system supports improved report quality and rabies response. (11)

2. Data Flexibility and Quality

The flexibility of services at the Puskesmas demonstrates a high level of adaptability, with a willingness to handle cases of Rabies-Transmitting Animal Bites (GHPR) even if the community does not reside in the Puskesmas' working area. This ensures that every case is handled without being hindered by administrative boundaries. Regarding data quality, the Head of the Puskesmas guarantees that the data collected from surveillance activities is accurate and reliable.

3. Cross-Sector Stability and Coordination

The stability of the rabies surveillance system is emphasized through the importance of cooperation, both between internal programs and across sectors. Good coordination efforts are considered important to minimize the risk of errors in the data. Epidemiological monitoring (EM) is carried out using two methods, namely by telephone or direct visits to the location of the incident. The need for multisectoral collaboration is in line with the findings that intersectoral cooperation is key in controlling zoonotic diseases. (12)

4. Challenges in Implementing Surveillance

Although the operational system is running well, the Kampung Baru Community Health Center faces challenges related to community acceptance. The main challenge identified is the refusal of patients to undergo further examination or treatment, influenced by inaccurate information about the side effects of treatment. This phenomenon confirms that low public awareness and lack of active participation are serious obstacles in rabies reduction efforts. (13)

3.2 Discussion

Rabies is one of the zoonotic diseases classified as a Neglected Tropical Disease (NTD) and remains a public health problem, especially in developing countries. Neglected tropical diseases are generally associated with socioeconomic conditions, limited access to health services, and low public health literacy. NTDs still require serious attention through the strengthening of primary health care systems, particularly in terms of disease surveillance and prevention (14). In this context, rabies is a disease that is very important to control because it is fatal if not treated quickly and appropriately.

The WHO states that rabies is actually a preventable disease through effective surveillance systems, rapid response to exposure, and optimal primary health care support (WHO, 2020). Therefore, the role of community health centers as the frontline of health services is very strategic in early detection and control of rabies.

Interviews with surveillance officers at the Kampung Baru Community Health Center showed that rabies surveillance activities have been carried out routinely through weekly reporting. In addition, if a case requiring monitoring is found, the health center immediately follows up within 24 hours, either by telephone or by visiting the patient's location. This rapid response reflects the application of the principle of early warning in epidemiological surveillance of infectious diseases. This is in line with national policy that emphasizes the importance of timely reporting and handling of rabies animal bite cases to prevent deaths from rabies. (3)

Timely handling is crucial, as rabies cannot be cured once clinical symptoms have appeared. Research shows that delays in seeking treatment and administering rabies vaccines after animal bites can increase the risk of rabies in humans (3). Thus, a surveillance system capable of responding to cases in a short time, such as the one implemented at the Kampung Baru Community Health Center, is an important component in rabies prevention.

In addition to timeliness, flexibility of service is also one of the strengths in the implementation of rabies surveillance at the Kampung Baru Community Health Center. Based on the results of interviews, the health center continues to monitor and treat patients even if they come from outside the health center's working area. This approach shows that health services are more oriented towards patient safety than administrative boundaries. This condition is in line with research stating that the movement of humans and animals carrying rabies causes the risk of transmission to be cross-regional, so that rabies surveillance must be inclusive and not limited by administrative areas alone. (15)

The stability of the rabies surveillance system at the health center level is greatly influenced by cross-program and cross-sector cooperation. The interview results showed that coordination was carried out to prevent data errors and ensure that epidemiological follow-up was carried out optimally. The epidemiological monitoring process can be carried out through remote communication or direct visits to the field as a form of effort to maintain the continuity of case monitoring. This coordination is important considering that rabies surveillance does not only stop at recording cases but also includes follow-up monitoring to ensure that patients receive appropriate treatment.

Although rabies surveillance has been implemented well, the interview results also revealed challenges in its implementation, particularly related to community acceptance of follow-up examinations and treatment. Some community members refuse or are hesitant to undergo further examinations due to the influence of misinformation or hoaxes about the side effects of treatment. These challenges show that the success of the surveillance system is determined not only by technical aspects, but also by social and behavioral factors within the community.

This is in line with the research by Clarissa, which states that the level of public knowledge and attitudes has a significant relationship with rabies prevention measures. People with inadequate understanding tend to delay or refuse post-exposure treatment, thereby potentially increasing the risk of rabies. Other studies also show that low health literacy is one of the main obstacles in rabies prevention efforts at the community level, especially regarding medical advice. (16,17)

In addition, the readiness of health care facilities also plays an important role in supporting the effectiveness of rabies surveillance. Research at community health centers in the city of Medan shows that rapid response to animal bite cases is highly dependent on logistical support, the availability of rabies vaccines, and the readiness of health workers (18). The readiness of these facilities strengthens the role of health centers not only as providers of health services, but also as an early warning system in rabies control.

Community development and empowerment efforts at primary health facilities are important strategies in addressing these social challenges. Sustained community development in primary health facilities can increase community trust and participation in health programs. With increased community understanding and trust, compliance with rabies examination and treatment recommendations is expected to increase, thereby supporting the success of the rabies surveillance system. (19)

As a form of evaluation and effort to strengthen the rabies surveillance system at the Kampung Baru Community Health Center, a more comprehensive approach is needed to address these technical and social challenges. One relevant approach is the One Health approach, which emphasizes cooperation between the human health, animal health, and environmental sectors.

This approach focuses not only on treatment, but also on public education, control of sources of transmission, and cross-sector coordination. With the implementation of the One Health approach, the rabies surveillance system is expected to become stronger, more responsive, and more sustainable, thereby reducing the risk of treatment refusal and increasing the effectiveness of rabies control at the health center level. (4)

The One Health approach is an important aspect in evaluating rabies surveillance systems because this disease is a zoonosis that involves interactions between humans, animals, and the environment. In the context of rabies control, cross-sector integration such as human health, animal health, and community empowerment has been proven to improve the effectiveness of surveillance systems through strengthening case reporting, resource collaboration, and integrated prevention strategies. The implementation of the One Health approach in several regions shows that the involvement of various parties, including health agencies, livestock agencies, and local communities, can improve the coordination of rabies surveillance and intervention. Research in Kupang District found that although the One Health principle has been applied, limitations in legal frameworks and human resources remain major challenges, necessitating increased capacity for cross-sectoral coordination in the surveillance system. (20)

The role of rabies animal vaccination (VAR) as part of the One Health framework also emphasizes that the availability of vaccines and access to integrated prophylactic services are factors that strengthen the surveillance system's ability to respond to rabies cases in the community (21). Furthermore, the collaborative approach through One Health in Banten Province shows that rabies surveillance and control will be more effective if supported by cross-sector collaboration in the form of case surveillance, mass animal vaccination, and community education. An epidemiological study of rabies on Timor Island also indicates that the rabies surveillance system needs to evaluate the integration of human and animal health sector data and ensure a more solid communication network as part of the effective implementation of One Health. (22)

Finally, a literature review shows that public understanding of rabies (KAP) influences participation in surveillance and prevention programs, which are important elements of One Health for improving community response to rabies control efforts. (16)

4. CONCLUSION

Based on the results of the study, the rabies surveillance system at the Kampung Baru Community Health Center, Medan Maimun, is functioning well through weekly routine reporting, rapid response within 24 hours, and strong cross-sector coordination. This success shows that technical and managerial aspects are crucial in ensuring effective rabies surveillance and case management. However, the main challenges faced are low public awareness and resistance to follow-up examinations due to inaccurate information, which can hinder early detection and disease control.

In addition to technical factors, the success of the surveillance system is greatly influenced by social and behavioral factors. Low levels of knowledge, attitudes, and health literacy contribute to delays in post-exposure treatment, thereby increasing the risk of rabies transmission. Therefore, the One Health approach, which involves cross-sector collaboration and community empowerment, is an important strategy for strengthening the rabies surveillance and control system in a sustainable manner. Continuous training in primary health facilities and increased public awareness are expected to improve participation, trust, and compliance with rabies prevention programs.

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