

Evaluation of the Implementation of the Weekly SKDR Surveillance System at the Kutalimbaru Community Health Center

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ABSTRACT

The Early Warning and Response System (SKDR) is an important part of epidemiological surveillance of infectious diseases, which aims to detect early increases in cases of diseases with the potential to become extraordinary events (KLB). This study aims to evaluate the implementation of the weekly SKDR surveillance system at the Kutalimbaru Community Health Center. This study used a qualitative method with a descriptive evaluative approach, which assessed the input, process, and output components. Data collection was conducted through in-depth interviews with surveillance officers as the main informants. The results showed that in terms of input, the availability of facilities and infrastructure was adequate. In terms of process, data processing and analysis were carried out routinely, but the analysis did not optimally cover the person aspect. In terms of output, surveillance information was generated and submitted to the health office, but the timeliness of reporting was still hampered by delays in reports from the service network and the unavailability of written dissemination media. In conclusion, the implementation of weekly SKDR surveillance at the Kutalimbaru Community Health Center has been carried out, but it still needs to be strengthened, especially in data analysis and information dissemination, so that the system can function optimally as an early warning tool.

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1. INTRODUCTION

Extraordinary events (KLB) such as contagious diseases and food poisoning remain a public health problem because they can cause significant illness and mortality rates. (1)

The early warning system is one of the fundamental components of infectious disease surveillance that serves to quickly detect indications of an increase in cases that have the potential to become Extraordinary Events (KLB). In Indonesia, this system is known as the Early Warning and Response System (SKDR), which is also often referred to as the Early Warning Alert and Response System (EWARS). SKDR is designed to routinely monitor trends in potentially epidemic diseases, primarily through weekly reports from primary health facilities such as community health centers, so that responses can be carried out quickly and accurately. SKDR plays a strategic role in

strengthening the national epidemiological surveillance system, in line with the objectives of the National Health System Law to prevent and control infectious diseases and epidemics(2). The implementation of the Early Warning and Response System (SKDR) can be carried out effectively if all aspects of the program are functioning properly. A system that strengthens a program can be formed by input, process, and output components. (3)

Indonesia has developed an Early Warning Alert and Response System (EWARS) or Early Warning and Response System (SKDR) that can detect preparedness for the development of 24 types of diseases that have an impact on public health. This system is connected to a network of all provinces and districts/cities, reaching all community health centers throughout Indonesia. This system supports the performance of the Public Health Emergency Operating System (PHEOC) developed by the Ministry. (4)

The utilization of technological and informational advances in the health sector is in line with Minister of Health Regulation No. 45 of 2014 concerning the Implementation of Health Surveillance, Article 17, which states that the implementation of health surveillance must be supported by the availability of human resources with expertise in epidemiology, adequate funding, and facilities and infrastructure, including the use of appropriate technology (5). Furthermore, Minister of Health Regulation No. 45 of 2014 explains that Early Warning of Outbreaks and Response is a set of activities for early detection of diseases and health problems with outbreak potential and the factors that influence them, followed by increased preparedness, prevention efforts, and rapid and appropriate response measures, using surveillance technology (5). Law No. 36 of 2009 explains that "Health technology is any form of tool and/or method intended to assist in the diagnosis, prevention, and treatment of human health problems." (6)

SKDR implementation is carried out routinely in stages, starting from the lowest level of health service units to the central level. SKDR is one of the tools developed by the government as part of the implementation of the National Health System (SKN), in which the components involved in SKDR implementation are carried out in an integrated and mutually supportive manner to ensure the achievement of public health (7). In 2009, SKDR was first implemented in Lampung and Bali provinces. SKDR has been implemented in Indonesia since 2009 through the Sub-Directorate of Surveillance and Outbreak Response (Directorate General of Disease Control and Prevention) of the Indonesian Ministry of Health. At the end of 2015, the Ministry of Health of the Republic of Indonesia (RI) created a website/SKDR to facilitate data processing and reporting as an effort to detect diseases early and respond quickly. [8]

The use of SKDR technology is an effort to detect outbreaks early, because the alert data in the system can prevent outbreaks from occurring or spreading, and prevent them from recurring in the future. SKDR also facilitates reporting from the smallest units in community health centers to the central unit at the Ministry of Health using only smartphones. The analysis from SKDR then becomes a routine report submitted to the head of the Health Office. If an outbreak occurs, the Head of the Office can make further decisions on countermeasures to prevent the outbreak from spreading. (8)

SKDR at the health center level includes the collection and reporting of weekly data on 24 indicators of diseases with outbreak potential, which are processed into early warning information that can trigger rapid response actions. The success of this system is highly dependent on timeliness, data completeness, and the ability of surveillance officers to manage and utilize data for public health decision-making. A comprehensive evaluation of SKDR implementation is essential to assess the system's effectiveness, identify operational obstacles, and improve the quality of reporting and response at the field level. (3)

Several national studies have examined the implementation and evaluation of SKDR in various regions in Indonesia. For example, an evaluation study of SKDR in the South Tangerang City Health Center found problems in several reporting indicators that did not meet national targets, even though the program policy had been disseminated and a number of health centers carried out surveillance activities on a routine basis (8). Another study in the Special Region of Yogyakarta Province showed that the EWARS/SKDR system can be implemented well in terms of the accuracy and completeness of reports, but improvements are still needed in the validation of reported disease data to ensure it meets standards (7). In addition, the development of digital technology utilization in SKDR shows opportunities for improving reporting efficiency and monitoring disease trends, which are increasingly relevant in the era of health service digitalization. (6)

However, despite the existence of various system evaluation studies, there are not many studies in the national scientific literature that specifically evaluate the implementation of weekly SKDR at the Kutalimbaru Community Health Center. Given the important role of health centers in the implementation of primary surveillance, a comprehensive evaluation is needed to determine the extent to which key SKDR indicators, such as reporting timeliness, data completeness, and utilization of surveillance information, have been optimally implemented at the Kutalimbaru Community Health Center.

Based on this, this study aims to evaluate the implementation of the weekly SKDR surveillance system at the Kutalimbaru Community Health Center, so that it can provide an overview of the of the actual implementation of surveillance, as well as to provide recommendations for improvement for program managers at the health center and health office levels.

2. METHOD

This study is a qualitative study with a descriptive evaluative approach. The study aims to evaluate the implementation of the surveillance system at the Kutalimbaru Community Health Center based on input, process, and output components. Data collection was conducted through *in-depth interviews* with 5 surveillance officers at the Kutalimbaru Community Health Center, specifically SKDR surveillance officers as the main informants. Data were analyzed using thematic analysis, with stages of data reduction, data presentation, and conclusion drawing.

3. RESULTS AND DISCUSSION

3.1 Input

3.1.1 Man (Human Resources)

Based on the questionnaire results, it was found that the Kutalimbaru Community Health Center has one person specifically assigned to epidemiological surveillance, particularly the weekly Early Warning and Response System (SKDR). The surveillance officer is female, 38 years old, with a bachelor's degree in health, and has been working as a surveillance officer for 6 years. In addition to carrying out surveillance duties, the officer also performs other duties as an administrative staff member.

The questionnaire results showed that the surveillance officer had participated in surveillance training organized by the Ministry of Health of the Republic of Indonesia in 2024. This training was a supporting factor in the implementation of surveillance activities, especially in filling out, processing, and reporting EWS data.

However, the presence of only one surveillance officer who also performs other tasks has the potential to affect the optimization of surveillance implementation, particularly in data analysis and interpretation activities that require accuracy and adequate time allocation. Although based on the interview results, this condition was not reported as an obstacle in the implementation of SKDR surveillance at the Kutalimbaru Community Health Center, this situation still needs to be considered in efforts to strengthen the surveillance system.

The guidelines for conducting surveillance emphasize that the availability of adequate surveillance personnel who are focused on their tasks is one of the prerequisites for ensuring the effectiveness and sustainability of the surveillance system (3). Thus, the human resources aspect at the Kutalimbaru Community Health Center has basically supported the implementation of SKDR surveillance, but still has the potential to be improved in order to support the quality of analysis and more optimal utilization of surveillance data.

1.1.1. Material (Facilities and Infrastructure)

Based on the evaluation results, it is known that the facilities and infrastructure to support the implementation of SKDR surveillance at the Kutalimbaru Community Health

Center are fully available. The available facilities include surveillance manuals, technical guidelines for outbreak response, reporting formats or forms (W1, W2, SKDR), report recapitulation archives, computers or laptops, internet access for online reporting, and data processing software such as Microsoft Excel.

The availability of these facilities and infrastructure is in accordance with the provisions for the implementation of a health surveillance system, which states that the minimum surveillance facilities must include data processing equipment, technical guidelines, and communication and reporting facilities (3). With these material components in place, the implementation of SKDR surveillance at the Kutalimbaru Community Health Center did not encounter any significant obstacles in terms of facilities and infrastructure.

1.1.2. Method (Data Collection System)

The data collection method for surveillance at the Kutalimbaru Community Health Center is carried out through weekly SKDR reporting. Based on the questionnaire results, the SKDR reports collected at the community health center were complete up to the last reporting week (2). In addition, the community health center has a system for storing reports in both manual and digital forms.

However, the evaluation results show that there are still delays in reporting from the service network in the health center's working area. These delays have the potential to affect the timeliness of reporting and early detection of an increase in potential outbreak cases.

3.2 Process

1.2.1. Data Processing

The results of the study show that SKDR surveillance data at the Kutalimbaru Community Health Center is routinely processed by surveillance officers. Before processing, the data is first checked to ensure the completeness of the reports. Data processing is carried out using Microsoft Excel software.

Data grouping is done based on place of residence, gender, age, and week of occurrence, but grouping based on month of occurrence has not been done. This shows that the data processing process is ongoing, but there is still room to improve the quality of data processing so that longer-term trend analysis can be carried out. This is in line with the research by Kadari and Kardiwinata (2020), which states that most surveillance officers in Denpasar City and Buleleng Regency already have Microsoft Excel-based data by name, so that the SKDR electronic register data is complete because it includes the identity of the person, place, and time of the case. (9)

1.2.2. Data Analysis

SKDR surveillance data analysis at the Kutalimbaru Community Health Center was conducted descriptively, primarily based on place and time. However, the evaluation results showed that analysis based on person had not been carried out optimally.

According to the SKDR monitoring and evaluation guidelines, data analysis covering people, place, and time is essential to produce comprehensive epidemiological information and support appropriate decision-making(3). [The limitations of person-based analysis can impact the system's ability to identify specific risk groups.

1.2.3. Data Interpretation

Although the data analysis is not yet complete, the results of the analysis are still interpreted by surveillance officers to determine disease trends, the risk of an increase in cases, and the potential for an outbreak. This data interpretation forms the basis for early warning and communication of information to relevant parties.

Routine data interpretation shows that the SKDR surveillance system at the Kutalimbaru Community Health Center has been utilized as a tool for monitoring the public health situation, although it still requires strengthening in terms of analysis.

3.3 *Output*

1.3.1. Information

The output of the SKDR surveillance system at the Kutalimbaru Community Health Center is weekly epidemiological information used to monitor disease developments in the community health center's working area. This information forms the basis for reporting to the District Health Office and as material for early warning of potential outbreaks.

However, delays in reporting from the service network mean that the timeliness of information is not yet optimal, so the sensitivity of the system in detecting disease outbreaks early still needs to be improved. (10)

1.3.2. Information Dissemination and Feedback

The results of SKDR surveillance at the Kutalimbaru Community Health Center are reported to the District Health Office and forwarded to auxiliary community health centers or village health posts. The media used to disseminate information include written reports, community health center staff meetings, and cross-sector meetings. Information is disseminated on a monthly basis, while cross-sector meetings are held every three months.

To date, there has been no dissemination of SKDR case data to the general public because SKDR case data is sensitive and still in the form of suspected or moving data, which risks being misinterpreted by the media or the public. This is in line with Akbar's (2021) research, which explains that the media can have a negative impact if the information disseminated is misused, such as being used as hoaxes to scare or cause unrest in the community, which can affect the psychological condition of the community (10,11). Therefore, the community needs to be wise in sorting information to avoid misleading speculation.

In addition, the health center receives regular feedback from the District Health Office, approximately once a week. This feedback indicates the existence of a two-way communication mechanism within the surveillance system. However, the lack of a written surveillance bulletin means that the dissemination of information has not reached the entire network optimally, especially for those who were not present at the meeting.

1.3.3. Problems and Obstacles

Based on the evaluation results, the main problems in the implementation of SKDR surveillance at the Kutalimbaru Community Health Center include:

- a. Delays in reporting from the service network.
- b. Data analysis that does not yet cover the person aspect.
- c. The unavailability of written dissemination media such as surveillance bulletins.

These problems indicate that although the surveillance system is already in place, efforts are still needed to strengthen it so that it can function optimally as an early warning tool.

4. CONCLUSION

The implementation of the weekly SKDR surveillance system at the Kutalimbaru Community Health Center has generally been running well and is able to produce epidemiological information as a basis for early warning of diseases with the potential for outbreaks. In terms of input, the supporting facilities and infrastructure are well available, but limited human resources, particularly the number of surveillance officers, which is only one person with multiple tasks, is an obstacle to the optimization of surveillance implementation.

In terms of process, data processing and analysis have been carried out routinely, but data analysis has not covered all epidemiological components, especially the person aspect, so the information produced is not yet fully comprehensive. In terms of output, surveillance information has been conveyed to relevant parties and supported by a feedback mechanism,

but the timeliness of reporting and dissemination of information still needs to be improved due to delays in reporting from the service network and the unavailability of written dissemination media such as surveillance bulletins.

Therefore, efforts are needed to strengthen the implementation of SKDR at the Kutalimbaru Community Health Center by improving the quality of data analysis and optimizing the timeliness and media for information dissemination so that the surveillance system can function more effectively as an early warning system.

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REFERENCES

1. Kemenkes RI. Peraturan Menteri Kesehatan Republik Indonesia Nomor 1 Tahun 2026 tentang Kejadian Luar Biasa, Wabah, dan Krisis Kesehatan. Kementerian Kesehatan Republik Indonesia. Jakarta: <https://jdih.kemkes.go.id/documents/peraturan-menteri-kesehatan-nomor-1-tahun-2026>; 2026.
2. Kemenkes RI. Pedoman Sistem Kewaspadaan Dini dan Respon (SKDR) Penyakit Potensial KLB/Wabah. Jakarta: Kementerian Kesehatan Republik Indonesia; 2024.
3. Kemenkes RI. Petunjuk Teknis Monitoring dan Evaluasi Sistem Kewaspadaan Dini dan Respon (SKDR). Jakarta: Kementerian Kesehatan RI; 2025.
4. Kemenkes RI. Undang-Undang Republik Indonesia Nomor 17 Tahun 2023 tentang Kesehatan. <https://peraturan.bpk.go.id/details/258028/uu-no-17-tahun-2023>; 2023.
5. Peraturan Presiden Republik Indonesia Nomor 72 Tahun 2012 tentang Sistem Kesehatan Nasional. <https://peraturan.bpk.go.id/Details/41327/perpres-no-72-tahun-2012>. 2012.
6. Fitriani H, Hargono A, Isfandiari MA. Perkembangan Pemanfaatan Teknologi Digital Surveilans Sistem Kewaspadaan Dini dan Respon (SKDR)/EWARS Di Indonesia. *Majalah Sainstekes*. 2024 Feb 13;10(2):103-16. doi:10.33476/ms.v10i2.3979
7. Marullyta A, Rohananingsih R. Evaluasi Sistem Kewaspadaan Dini dan Respon Penyakit (SKDR) Provinsi Daerah Istimewa Yogyakarta tahun 2022. *Multidisciplinary Journal*. 2022 Jul 8;5(1):5. doi:10.19184/multijournal.v5i1.42959
8. Donabedian A. Evaluating the Quality of Medical Care. *Milbank Q*. 2005 Dec 9;83(4):691-729. doi:10.1111/j.1468-0009.2005.00397.x
9. Kadari NKSD, Kardiwinata MP. IMPLEMENTASI REGISTER BERBASIS ELEKTRONIK PADA SKDR UNTUK MENCEGAH PENYAKIT BERPOTENSI KLB DI KOTA DENPASAR DAN KABU-PATEN BULELENG TAHUN 2019. *ARCHIVE OF COMMUNITY HEALTH*. 2020 Jun 1;7(1):30. doi:10.24843/ACH.2020.v07.i01.p04
10. WHO. Communicating risk in public health emergencies A WHO guideline for emergency risk communication (ERC) policy and practice. Switzerland; 2017.
11. Akbar S. Media komunikasi dalam mendukung penyebaran informasi penanggulangan pandemi COVID-19. *Majalah Semi Ilmiah Populer Komunikasi Massa (Kominfo Indonesia)*. 2021;78-32.