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Yang bertanda tangan di bawah ini Ketua Lembaga Penelitian Sekolah Tinggi Ilmu Kesehatan Kuningan (STIKKU) menugaskan kepada :

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Untuk melaksanakan tugas penelitian dalam rangka memenuhi salah satu tugas Tri Dharma Perguruan Tinggi dengan :

Judul : **Evaluation of functionally and usability case tracing information system (Silacak App) Covid-19 in Indonesia**

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Kepada dosen yang bersangkutan berkewajiban untuk menyerahkan laporan akhir penelitian baik dalam bentuk *soft copy* maupun *hard copy* sejumlah 3 eksemplar selambat-lambatnya 7 hari sejak penelitian berakhir.

Demikian surat tugas ini dibuat untuk dipergunakan sebagaimana mestinya.

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Evaluation of functionally and usability case tracing information system (Silacak App) Covid-19 in Indonesia

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Introduction: The Covid 19 pandemic threat is wreaking havoc on the world, endangering not only the physical and mental wellbeing of people but also on the global economy. Pressure grows to do anything to control the spread of Covid 19 globally. Case tracing was identified as one of the strategies for monitoring the spread of COVID-19. However, Indonesia is struggling to get accurate case data even at the local health and community level. **Aims:** This study aimed to develop and validate the case tracking information system called the "Silacak App" to improve the contact tracing of the Covid-19 surveillance system at all levels in Indonesia. **Method:** Mini-Delphi or Estimate-Talk-Estimate approach was used with data collection deployed face-to-face and focus group discussions with panel experts. The routine Health Information Systems (RHIS) framework was used as the framework. Results: Experts confirmed that the SILACAK application can improve the reporting of current tracing contacts starting from confirmed cases, contacts, and characteristic data that can be directly inputted into the system by the Indonesian National Armed Forces (TNI)/Indonesian National Police (polri) and community, data managers, and supervisors in each city district. **Conclusion and Recommendation:** The Silacak App shows completeness for the main functions with a moderate usage perspective, and recommendations for adding case estimation features, mapping contacts and Covid-19 cases with thematic maps for each health facility.

Evaluation of Functionally and Usability Case Tracing Information System (Silacak App) Covid-19 in Indonesia

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Abstract. Introduction: The Covid 19 pandemic threat is wreaking havoc on the world, endangering not only the physical and mental wellbeing of people but also on the global economy. Pressure grows to do anything to control the spread of Covid 19 globally. Case tracing was identified as one of the strategies for monitoring the spread of COVID-19. However, Indonesia is struggling to get accurate case data even at the local health and community level. **Aims:** This study aimed to develop and validate the case tracking information system called the "Silacak App" to improve the contact tracing of the Covid-19 surveillance system at all levels in Indonesia. **Method:** Mini-Delphi or Estimate-Talk-Estimate approach was used with data collection deployed face-to-face and focus group discussions with panel experts. The routine Health Information Systems (RHIS) framework was used as the framework. Results: Experts confirmed that the SILACAK application can improve the reporting of current tracing contacts starting from confirmed cases, contacts, and characteristic data that can be directly inputted into the system by the Indonesian National Armed Forces (TNI)/Indonesian National Police (polri) and community, data managers, and supervisors in each city district. **Conclusion and Recommendation:** The Silacak App shows completeness for the main functions with a moderate usage perspective, and recommendations for adding case estimation features, mapping contacts and Covid-19 cases with thematic maps for each health facility.

INTRODUCTION

In order to contain the Covid-19 pandemic, information systems are becoming a crucial communication tool between field agents and stakeholders. Data collection for the Surveillance Information System (Covid-19) in Indonesia includes antigen screening tests, manual and electronic recording, manual and electronic reporting, manual and electronic data analysis, manual and electronic data interpretation by surveillance officers, immediate response through contact tracing and isolation or quarantine assisted by an electronic recording system, and planned response through restrictions on social activities. [1].

The online applications All Record TC-19 (NAR TC-19), Covid-19 Daily Reporting Online System, and Case Tracking Inform are Covid-19 recording and reporting systems in Indonesia that support the implementation of surveillance mandated by the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07 / MENKES / 413/2020 on Guidelines for Prevention and Control of Covid-19. [2].

The DHIS2 platform was implemented in the creation of the Silacak Application, a Covid-19 Contact Case Tracking application, by the Ministry of Health and the National Disaster Management Agency, with assistance from WHO and the Indonesian Health Information System Program (HISP). The Silacak Application, which was created in two versions—web-based and mobile-android-based—is a DHIS2-based program used in Indonesia across 34 provinces to gather, process, and evaluate health information. [3, 4].

The Silacak Application is a tool for tracing contacts from confirmed cases. Contacts and characteristic data can be directly inputted into the system so that the resulting output is information about close contacts in the form of graphs, diagrams, and mapping. The application has two functions, namely, 1) entering contact tracking data such as index cases, close contacts, and daily monitoring results and 2) a monitoring dashboard that displays the achievement of contact tracking indicators and individual data of index cases, close contacts, and monitoring results. In addition to the community, data managers, and supervisors in each Indonesian city district, this program is used by contact tracking officers (tracers) and case tracking officers from the Indonesian National Armed Forces (TNI) and Indonesian National Police (polri).

The primary purpose of the Silacak Application is to allow for the monitoring and recording of Covid-19 Close Contacts. The Person in Charge of Test, Trace, and Isolation (PIC TTI) at each health care facility supervises tracers as they enter data at the Public Health Center level. The NAR-Silacak Application system was integrated

in April 2021, allowing tracers to directly track close contacts who live in the working region of the Public Health Centers and allowing confirmed case data from the NAR application to be automatically entered into the SILACAK application..[3].

The completeness and accuracy with which the results of the number of tests in NAR and contact tracing in the Silacak Application are reported have an impact on epidemiological analysis such as the positivity rate. In August-September 2021, based on weekly epidemiological data, actual cases are always greater than NAR cases from week 32 to week 36, with differences in the range of 16–22%. While the completeness of daily reports for 51 days is 63.56%, which is still below the national target of 80% complete. In the implementation of surveillance for case search and close contact using the Silacak Application in Indonesia, there are still differences between actual cases or manual recording. The number of daily cases from the first and third weeks is inputted by Silacak and is less than manual data [5].

The degree of application approval by the user is one of the elements that influences the effectiveness of surveillance when using an app. Improved care, usefulness, usability, simplicity of use, and privacy/comfort are key factors influencing technology acceptance. [6]. The acceptance rate of the Silacak Application by the Public Health Centre based on research results shows that the Silacak application is a useful medium for Covid-19 recording and reporting. This application is easy to learn, but it still needs improvement and development on several fronts. For example, the Silacak Application has not met the criteria to increase productivity due to the many systems used for reporting Covid-19, a data storage process that is considered long enough due to frequent technical glitches. Users frequently complain that Silacak Application's system response time is too long, so it hasn't fulfilled the requirement for a quick system response time. Control indicators are less noticeable in the Silacak Application because officers must call the data manager to recover the sent data. [7].

The usability and functionality of the program itself have an impact on how well it will be able to enhance the Covid-19 surveillance system. Usability is crucial for assisting users in finishing a job with the least amount of cognitive load. The extent to which a product can be used by specific users to accomplish specific objectives with effectiveness, efficiency, and satisfaction in a specific context of use is referred to as usability, according to the International Standards Organization (ISO 9241-11). [8]. When developing and assessing technology, usability, experience, and functionality all reflect three aspects of usage that must be taken into account[9]. Analyzing the Silacak Application's performance and usefulness from the point of view of its primary users Supervisor, Contact Tracker, and Data Manager must contribute ideas for upcoming changes..

METHODS

This research used a case study along with a qualitative methodology. The Estimate-Talk-Estimate (ETE) methodology was used, with focus groups made up of panel experts and face-to-face data gathering. The structure was the Routine Health Information Systems (RHIS) framework. The purpose of this observation is to better understand how the observation subject perceives the role and value of the Silacak application in documenting and presenting Covid-19 activities in accordance with the aspect technology used theory. From March 28 to April 9, 2022, observations were taken in Kuningan Regency, West Java Province, Indonesia.. Subjects were determined using purposive sampling. The ETE method was used with 3 participants, of whom 1 was the data manager, 1 contact tracer, and 1 supervisor from the District Health office were purposely selected as experts for the study all over the Kuningan District because that is as a users of the Silacak Application. three stages of data collection: 1) Facilitator asks a group of experts for specific opinions, 2) The expert responds to the inquiry, gets input, and then edits their statement, 3) The facilitator analyzes the answers and gives each expert a new set of questions. There may be a need for multiple feedback processes, 4) Producers of the facilitator provide expert views, highlighting significant outliers.[10]. Qualitative data analysis uses content analysis.

RESULTS

Regarding the purpose, the data collected, and the study's results, see the table below.

TABLE 1. Functionality and Usability Silacak App

Functionality:	Result
Silacak App Reporting	1. Silacak App enables users to calculate the quantity and proportion of monthly reports obtained relative to the total number of anticipated reports 2. Users of the Silacak App can examine the trends in reporting accuracy for a year by the Public Health Center and District Health Office facilities. 3. Users of the Silacak App can find out how many and what proportion of reports were delivered on time. 4. The Silacak App generates summary summaries at various levels (Public Health Center, District Health Office, Regional, and National) and for various time frames (Weekly, Monthly, Annually, and Customized reporting period), but not at the community-level service delivery point (SDP)
Population estimate and coverage calculation	1. The Silacak App lacks population estimates for use in calculating the denominators, but it can still compute coverages for contacts, cases, and quarantines.
Data Integration	1. All of the parallel systems mentioned can interact with the Silacak app because it was integrated with a parallel application like NAR and Peduli Lindungi App. 2. Silacak Ap was integrated with the integrated disease surveillance and response (IDSR)/notifiable diseases but did not have human resources information or connect with a human resources information system (HRIS), logistical information, or financial information.
Age and Sex disaggregated data	1. The Silacak Program collected data that was broken down by sex and age.
Unique identifier for health facility and health administrative units	1. Silacak App makes use of a master facility inventory that already exists (MFL) 2. Between 26 and 50 percent of the healthcare institutions have associated geographic coordinates. 3. Silacak App does not utilize distinct identifiers for areas and districts.
Data Visualisation	1. Visualization The Silacak App generated tabular data that was organized in a listing format (i.e., facilities in rows, data elements/indicators (contact, case, and quarantine) in columns, and rows for district/region/national aggregations), time trend graphs, graphs for comparing facilities/districts/regions, but did not require data visualization using thematic maps).
Usability	
Summary Report	1. A report on the quantity and proportion of reports received versus the overall anticipated number of reports was created by Silacak App. 2. Silacak App lacks a community-level SDP summary but is required to produce summary reports for the aggregate levels National Summary, District Summary, and Health Facility Summary.
User ability	1. Although the user has access to Community level SDP, they are unable to compute coverage of indicators (Contacts, Cases, and Quarantine) at the National, District, and Health Facility levels. 2. For the chosen one indicator, the Silacak App can display age and sex disaggregation (Contact, Case and Quarantine) 3. The Silacak App can create time trend graphs and bar graphs for comparing facilities, districts, or regions, but it cannot produce thematic maps by region, district, or health facility for two indicators. 4. The user tracking tool is unable to determine the primary causes of death from institutional mortality (hospitalization, emergency) 5. Neither the user nor the outpatient or inpatient services produce significant morbidity diagnoses (e.g., top ten diseases)
User perspective of SILACAK Application	1. classify/rate the Silacak App based on user experience as moderate 2. Need improvements silacak app to optimize the program

DISCUSSION

Functionality

Devices to support Covid-19 recording and reporting activities in Indonesia using the Silacak application with versions 1.0, 2.0 and 3.0 are available now that it has become a stable phase of the application. All renewal and repair activities are carried out in parallel. Apart from the application side as well, on the data side, control is also still carried out. The Silacak application is aimed at recording someone who is classified as a close contact[3]. Silacak is used to input every case that has been conducted in epidemiological investigations that have been carried out with close contact tracing. Close contacts that have been found must be recorded and reported daily, regarding their health status, and the date of the last contact with the suspect/probable/confirmed case. The patient's name, clinical symptoms, comorbid, travel history, contact history, and the names of those in direct contact with the patient are among the information entered by the contact tracking officer in the Silacak Application. using each officer's account and access code, report confirmed cases and close connections using the Silacak application.. Granting access to individual officers is intended to prevent access by unauthorized persons. This is one of the developers' efforts to protect the confidentiality of Covid-19 patient data from security threats.[7]. Estimates of the magnitude of morbidity and mortality linked to the health issue under monitoring must be provided by the surveillance information system. [11]. In the Silacak Application, there is the input of morbidity data (confirmation cases) and mortality cases as status in patients, but it does not bring up calculations and estimates of the risk population.

Digital applications have an important role in contact tracing. This has a higher level of efficiency when integrated with several existing public health systems that are interconnected. The integration process has occurred as in recording confirmation cases on the New All Record (NAR) Application and PeduliLindungi Application, so that in Silacak that requires confirmation case data, no longer needs to be input. In addition, in inputting close contact data, it is only necessary to enter the National Identity Number due to integration with the Civil Registry Service so that close contact data can be entered without having to type manually. The utilization of a developing system, especially during the Covid -19 pandemic, is one of the needs and many system developments are not intended to burden the performance of a particular entity. While the integration can help reduce these problems so that strategies for handling Covid -19 can run effectively and efficiently [12].

Investigating potential causes of a disease or epidemic, studying an outbreak's spread, and studying its evolutionary patterns can all be aided by visualizing disease cases or surveillance-related events on a map. Finding geographic regions with abnormally high numbers of cases or events is one of visualization's main goals, which will help with surveillance and decision-making regarding outbreak responses. [13,14]. The Dashboard displays a visualization of the data entered into the Silacak application, including the number of cases and confirmed cases of Covid-19 being tracked, the ratio of close contacts to confirmed cases, the percentage of close contacts who have completed monitoring, and the percentage of close contacts who have been subjected to entry and exit tests. The dashboard facilitates concise and clear communication of deprivation statistics across areas. [15]. Dashboards can be a useful tool to support users in achieving their goals. Useful dashboards are characterized by two main functions: the selection of appropriate data and the choice of the most appropriate visualization technique [16].

The number of Covid -19 confirmation cases tracked, the ratio of close contacts to confirmed cases, the percentage of close contacts who have completed monitoring, and the percentage of close contacts who have been subjected to entry and exit tests are the indicators used by the Silacak Dashboard to assess the situation of Covid -19 contact tracking indicators in Indonesia. A policy has been created regarding the ratio determination, but in some areas, due to the number of close contacts that do not go beyond the permitted limits, some cannot exceed the provisions.. As a summary of the national COVID-19 conditions and the basis for future policymaking, regional assessments of contact tracking performance are based on the ratio of confirmed cases to close contacts as well as the number of tracked cases, close contacts made in and exit tests, close contacts conducted monitoring, and completed monitoring..

Usability

The District Health Office's data manager got the information entered by the contact tracking officer directly through the Silacak application. The District Health Office will verify and summarize the data that has been sent. District or local managers frequently favor integrated systems to reduce the number of documents they must fill out twice. [17]. After that, the Health Office will provide feedback to the Public Health Center (Puskesmas) regarding the achievement of contact tracing every month. Data that has been validated by the Regency will be used by the Provincial Health Office and the Ministry of Health to report nationally.

A helpful instrument for Covid-19 reporting and recording is the Silacak program. Although this application is simple to use, there are still a number of areas where it could use growth. [7]. The Silacak application's user

acceptance is adequate (moderate), but the acceptability of surveillance is significantly influenced by worries about surveillance, apparent transparency, regulatory requirements, and self-identified ideology. [18].

The proportion of indicators that have been fulfilled versus those that have not can be used to measure this acceptance. Effective Covid-19 treatments depend on timely and precise surveillance data. [19]. The improvement of performance and efficacy, the facilitation of work, and the overall benefits are signs that benefits have been perceived as having been realized. System flexibility and ease of use are indicators of how well the ease of impression has been met. Helping people work more quickly and producing more work are indicators of perceived unmet benefits, while ease of system management is an indicator of perceived unmet convenience.

CONCLUSION

The Silacak App shows completeness for the main functions with a moderate usage perspective, recommendations for adding case estimation features, mapping contacts and Covid-19 cases with thematic maps for each health facility.

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