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Submission Confirmation for PONE-D-19-28423 - [EMID:7568ead215cbc4c5]

3 messages

PLOS ONE <em@editorialmanager.com> 11 October 2019 at 16:54
Reply-To: PLOS ONE <plosone@plos.org>
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.
PLOS ONE

Dear Mr Hasyim,

Thank you for submitting your manuscript entitled 'Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.' to PLOS ONE. Your assigned manuscript number is PONE-D-19-28423.

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Kind regards,
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_____
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Hamzah Hasyim <hamzah.hasyim@gmail.com> 11 October 2019 at 17:26
Bcc: Dila Nita <dila.nita@my.gavilan.edu>

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Hamzah Hasyim <hamzah.hasyim@gmail.com> 6 November 2020 at 15:37
To: My Father <hamzah@fkm.unsri.ac.id>, hamzah hamzah <hamzah_hasyim@fkm.unsri.ac.id>

---------- Forwarded message ---------
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Date: Fri, 11 Oct 2019 at 16:53
Subject: Submission Confirmation for PONE-D-19-28423 - [EMID:7568ead215cbc4c5]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

[Quoted text hidden]

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Respectfully,

Hamzah Hasyim

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Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

--Manuscript Draft--

Manuscript Number:	PONE-D-19-28423R2
Article Type:	Research Article
Full Title:	Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.
Short Title:	A web-based management information system
Corresponding Author:	Hamzah Hasyim, Dr. rer. med. Universitas Sriwijaya Indralaya, South Sumatra INDONESIA
Keywords:	Keywords: System information; web; Primary Healthcare Centre; CMS Joomla.
Abstract:	Background : A web-based malaria reporting information system (MRIS) has the potential to improve malaria reporting and management. The aim of this study was to evaluate the existing manual paper-based MRIS and to provide a way to overcome the obstacles by developing a web-based MRIS in Indonesia. Methods : An exploratory study was conducted in 2012 in Lahat District, South Sumatra Province of Indonesia. We evaluated the current reporting system and identified the potential benefits of using a web-based MRIS by in-depth interviews on selected key informants. Feasibility study was then conducted to develop a prototype system. A web-based MRIS was developed, integrated and synchronized, with suitability ranging from Primary Healthcare Centres (PHCs) to the Lahat District Health Office. Results : The paper-based reporting system was sub-optimal due to a lack of transportation, communication, and human capacity. We developed a web-based MRIS to replace the current one. Although the web-based system has the potential to improve the malaria reporting information system, there were some barriers to its implementation, including lack of skilled operators, computer availability and lack of internet access. Recommended ways to overcome the obstacles are by training operators, making the application in an offline mode and able to be operated by mobile phone text messaging for malaria reporting. Conclusion: The web-based MRIS has the potential to be implemented as an enhanced malaria reporting information system and investment in the system to support timely management responses is essential for malaria elimination. The developed application can be cloned to other areas that have similar characteristics and MRIS with a built-in web base to aid its application in the 5G future.
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	Ulrich Kuch
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Opposed Reviewers:	
Response to Reviewers:	Response letter to the review of PONE-D-19-28423R1, Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia. PLOS ONE Dear

	Luzia Helena Carvalho, Ph.D. Academic Editor PLOS ONE Please find below our response to reviewer 2. Sincerely, Hamzah Hasyim (on behalf of all authors) Reviewer's Responses to Questions Reviewer #1: (No Response) Reviewer #2: The authors have addressed all concerns by the reviewers, and I would recommend publication in this current form. If it is possible, the authors should include the current status of the Web-based system (since surveys were implemented in 2012) and the benefit it brings Response: Thank you for your very helpful feedback. The open-source programming language was first released in 2005 and has seen upgrades since then, but remains a free, open source system that can be used for a MRIS. It will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields. In our future research we plan to extend the study for the optimization of malaria surveillance information systems through the application of the android mobile geospatial information system (GIS) in endemic area Lahat District, South Sumatra Province in 2020.
Additional Information:	
Question	**Response**
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Institute of Occupational, Social and Environmental Medicine,

Faculty of Medicine, Goethe University Frankfurt.

Frankfurt, 14.02.2020

Re: Submission of a revised manuscript: PONE-D-19-28423R1

Dear Dr Luzia Helena Carvalho,

Thank you for your response to the review of our manuscript:

> "Potential for a Web-Based Management Information System to Improve Malaria Control: An exploratory study at Lahat district, South Sumatra Province, Indonesia."

We have considered the remaining comment:

"Reviewer #2: The authors have addressed all concerns by the reviewers, and I would recommend publication in this current form. If it is possible, the authors should include the current status of the Web-based system (since surveys were implemented in 2012) and the benefit it brings"

We have amended the text to read:
"The open-source programming language was first released in 2005 and has seen upgrades since then, but remains a free, open source system that can be used for a MRIS. It will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields."

We have put amended sentences in the main document at line 357-360.

We hope that this is now satisfactory

Yours sincerely,

Hamzah Hasyim (on behalf of all authors)

Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia

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Abstract

Background: A web-based malaria reporting information system (MRIS) has the potential to improve malaria reporting and management. The aim of this study was to evaluate the existing manual paper-based MRIS and to provide a way to overcome the obstacles by developing a web-based MRIS in Indonesia.

Methods: An exploratory study was conducted in 2012 in Lahat District, South Sumatra Province of Indonesia. We evaluated the current reporting system and identified the potential benefits of using a web-based MRIS by in-depth interviews on selected key informants. Feasibility study was then conducted to develop a prototype system. A web-based MRIS was developed, integrated and synchronized, with suitability ranging from Primary Healthcare Centres (PHCs) to the Lahat District Health Office.

Results: The paper-based reporting system was sub-optimal due to a lack of transportation, communication, and human capacity. We developed a web-based MRIS to replace the current one. Although the web-based system has the potential to improve the malaria reporting information system, there were some barriers to its implementation, including lack of skilled operators, computer availability and lack of internet access. Recommended ways to overcome the obstacles are by training operators, making the application in an offline mode and able to be operated by mobile phone text messaging for malaria reporting.

Conclusion: The web-based MRIS has the potential to be implemented as an enhanced malaria reporting information system and investment in the system to support timely management responses is essential for malaria elimination. The developed application can be cloned to other areas that have similar characteristics and MRIS with a built-in web base to aid its application in the 5G future.

Introduction

Malaria is a public health problem in tropical and sub-tropical countries which associated with high morbidity and mortality, particularly in vulnerable groups [1, 2]. In 2017, it was estimated there were 219 million malaria cases globally, most of the cases occurred in Africa (200 million or 92%), followed by South-East Asia and the East Mediterranean region [3]. In Indonesia, the national government aims to eliminate malaria from the country by 2030 [4]. However, malaria is still a major public health problem in the country including in the Lahat District of South Sumatra Province. In 2012, the Annual Parasite Incidence (API) of malaria in Lahat District was 4.69 per 1,000 population [5]. The API is the most commonly used indicator for estimating the actual intensity of malaria transmission [6, 7]. Some determinants of malaria in the Lahat District have been identified including the proximity of breeding places of *Anopheles* mosquitoes to human settlement [8], as well as environmental factors that affect mosquitoes [9].

In the 1980s, the Ministry of Health (MoH) of Indonesia developed a paper-based integrated health centre reporting system, called *Sistem Pencatatan dan Pelaporan Tingkat Puskesmas* (SP2TP). However, after the implementation of the decentralization policy in 2004, the quality of and support for the health information system in each district and city decreased [10, 11]. This paper-based reporting system has not been well integrated into each health service unit such as in Primary Healthcare Centre (PHC) and District Health Office (DHC). Problems arise from the central, provincial and district/city governments in harmonizing policy implementation, including the synchronization, structuring and development of health information systems, and the commitment of regional governments to provide operational costs to implement essential health services [12]. Although online health information systems

(OHIS) were established by the MoH in 2011, several factors have led to their failure and these are investigated in this paper. Because of delays in malaria reporting in endemic areas in the country, local transmission can increase as a result of late intervention in vector control and contact transmission surveys [13]. Therefore, it is essential to develop a rapid and accurate reporting system using a web-based malaria reporting information system (MRIS) by adopting open-source systems such as Joomla. Such a reporting system is consistent with the World Health Organization (WHO) guidelines for malaria elimination strongly advocating malaria surveillance and strengthening of the malaria information systems [14].

This study had two research questions: (a) What is the state of the current paper-based recording system for malaria? And (b) Is there a potential for improvement using a web-based system? Therefore, the primary objective of this study was to evaluate the existing manual paper-based MRIS including to assess the barriers in using it Lahat District of Indonesia. The secondary objective was to develop and implement an integrated web-based MRIS utilising the content management system (CMS) Joomla in order to enhance malaria reporting system.

Methods

Study site and study design

Lahat District, an endemic malaria area in South Sumatra Province, is located between 1°46′ and 4°55′ of Southern Latitude and between 102°4′ and 104°41′ of Eastern Longitude and has a total surface area of 46,377.40 km^2 (Fig.1). The Aeronautical Reconnaissance Coverage Geographic Information System (ArcGIS) software v10.3.1 was used for mapping, processing, analysing, and visualisation of the data set, and the World Geodetic System 1984 (WGS84) was used as the references coordinate system.

Figure 1

An exploratory study using in-depth interview approach was conducted in 2012 among the PHC directors and stakeholders who worked on malaria prevention and control program in the DHO of Lahat District. The interviews were conducted by investigators and aided by Public Health students. During the interview, documents related to the current paper-based MRIS were assessed including active and passive malaria surveillance documents, human resources, facilities, and related infrastructure document. In the next phase, a prototype of a web-based of MRIS was developed. In the final stage, prototype MRIS was tested by researcher who expertise in system information where it was integrated and synchronised ranging from the PHCs to the DHO.

Key informant interviews

Interviews were conducted to obtain the perceptions of six key informants in Lahat District on using a paper-based MRIS, their perception of the need for a web-based MRIS, and their suggestions for MRIS development. Purposive sampling was employed to select the informants according to pre-determined categories, based on their knowledge and experience of using a MRIS. The key informants included the Heads of PHCs, the Coordinator of District disease prevention and control program, and District malaria officer who are directly engaged in the malaria program. The interviews were conducted by two researchers and helped by two undergraduate students of the Faculty of Public Health Sriwijaya University as enumerators who have been trained between June to July 2012. The training consisted of introducing data collection instruments, probing skills, recording responses, and transcription of records. Audio-tape and notes were recorded by all interviewers. The average time spent on each interview

was approximately 30 minutes. The structured in-depth interviewing guidance is given in Supporting Information S1.

Analysis of qualitative data

Interview recordings were transcribed after the fieldwork. Themes were produced based on the following: (a) the MRIS which was used; (b) problems encountered in the paper-based MRIS activities and; (c) suggestions for the design and development of a web-based MRIS. The transcripts were then revalidated, and the transcribed notes were entered into the computer. The interview responses were further simplified by coding in order to organise, systematise the data and construct a picture of the topic [15]. In this study, the researcher used phrases, for example, "*accessibility and mobility*", "*technological affordability*", and "e*xpectation*" to represent the essence of the data segment. The computer transcript of every response was inspected for themes and compared with other interviewees to identify repetition words, relevant texts, and phrases. The variety of opinions and views of the interviewees collectively with their recognised related verbatim quotes were used to produce a narrative and outline of the findings.

Development and testing of the web-based MRIS

Based on input from the informants in the review, we developed a prototype web-based MRIS at Sriwijaya University in Palembang utilising the content management system (CMS) Joomla. The information from in-depth interviews was synthesised and used as requirements of the basis for designing the system features. The final prototype was tested for its feasibility in the Laboratory of Health Informatics, Universitas Indonesia in Jakarta. The web-based MRIS was synchronised in one of sample Primary Healthcare Centres (PHCs) to the Lahat District Health Office.

151 The MRIS was developed using a methodology Framework for the Application of Systems
152 Techniques (FAST), a variation of the System Development Life Cycle (SDLC) [16-18]. FAST
153 has an appropriate way of standardisation and has a stable process for understanding the system
154 and for management planning. FAST consists of the following steps: (1) definition of the scope;
155 (2) analysis of the problem; (3) analysis of needs; (4) the logic of design; (5) review of the
156 decision; (6) physical design; (7) construction and testing; and (8) installation and delivery.
157 The framework presents a general approach to a modular design that was the first stage of the
158 SDLC. The data flow diagram of the developed web-based MRIS is presented in Fig.2.
159 Detailed processes to operate the MRIS are provided in Supporting Information S2.
160

161 **Figure 2**
162

163 ## Ethical considerations

164 The study was approved by the Research Institute of Sriwijaya University
165 (168.a/UN9.3.1/PL/2012). Participation was voluntary in this research, and there was no
166 financial incentive. The respondents provided written informed consent prior to participation.
167

168 # Results

169 # Evaluation of the existing paper-based MRIS

170 To evaluate the existing paper-based MRIS, in-depth interviews were conducted in six key
171 informants in Lahat District. The results from this study were used as to develop new MRIS.
172

Characteristics of the key informants

We conducted a qualitative research study using in-depth interviews with a purposive sample of Heads of PHCs, the Coordinator of District disease prevention and control program, and District malaria officer. Using a non-probabilistic purposive sampling technique, we conducted interviews for six key informants. The type of key informant (e.g. policy-maker, epidemiologist) formed the unit of analysis. It served as the critical identifier allowing us to compare the perspectives of the kinds of informants. The characteristics of demographic variables from the key informants consist of five males and one female, who average on an age of 35 years old and five years duration of work that they have been in malaria elimination program at Lahat DHO. Besides that, the characteristics of participants in an education degree, one participant has a master education and others a bachelor degree in a public health program. Key informant interviews allowed us to solicit in-depth and candid opinions of a broad range of stakeholders effectively. Furthermore, qualitative research can identify rich narratives and lived experiences not captured in quantitative analysis and does make assumptions about MRIS literacy of respondents.

Main concerns related to existing paper-based MRIS

There were three main areas of concern raised by the informants: accessibility and mobility; technological affordability and expectation. The general overview from the research revealed weaknesses in the paper-based MRIS such as the difficulty of compiling and distributing paper-based reports due to transport issue. In in-depth interviews, the informants revealed their perceptions and experiences when using the paper-based MRIS. Their statements reflect complexity and delay in reporting malaria cases to DHO. Labour-intensive manual reporting impedes the accuracy of data reception at the district level.

Limitations of access to information challenges the reporting flow. Human capacity is a constraint, especially in computer operation. In every PHC, the lack of a skilled official is a real obstacle.

In summary, problems and difficulties encountered identify the potential benefit of and an urgent need for a web-based online open-source of MRIS. The main problems are: (a) difficulty in mobility and accessibility; (b) technology affordability; and (c) expectation. For all these issues there is a need for an urgent solution. The issues are described below using the direct reports of respondents in the three key areas.

Accessibility and mobility

In manual reporting, the speed of delivering data from the PHC to the DHO can determine the policy output at the provincial level but is impeded by the lack of transport facilities. In the Pagar Jati PHC, for instance, the reporting activities were run by the Head of the Administrative Office. Data reporting was sent out before the 5th of every month. However, the subsequent information flow was also affected. The reporting format for malaria disease was separate from the template format provided by the Lahat DHO. Some of them were around its link-up with the PHC assessment and report of the SP2TP. The reporting process was completed manually for 2-3 days, this was subsequently recapitulated by the Diseases Prevention and Control (P2P). However, insufficient transport contributed to the inadequacies of and delays in the system:

> *The shortcomings of the manual reporting system to Lahat DHO from Pagar Jati PHC is accessibility like (means of transportation that only operate once a day). The distance between* Pagar Jati *PHC to DHO is 45 km with 1.5-hour trip, and the car only out once a day at 7-12. (Head of Pagar Jati PHC).*

Transportation facilities that were unable to extend to the Lahat District health office from the PHC office also caused delays:

For surveillance activities, it has been done routinely and conducted by P2P officers. In addition to the data collecting, P2P officers perform data processing before it is expedited to Lahat District *health office. Reporting of malaria data at Tanjung Sakti PHC usually refers to the form provided by Lahat* District *health office and finished before the 5th of each month. Constraints the staff overcome during the reporting is the risk of delay in delivery of reports. (Head of Tanjung Sakti PHC).*

The monitoring process in the Fajar Bulan Subdistrict also experienced delays due to the long distance. The lack of transportation facilities also curtailed the delivery of final reports:

Given a wide working area, it may take a long time in the surveillance process. Also, there is a delay in the process of collecting reports because the officer must travel for 2.5 hours or 67 kilometres to Lahat DHO.

The findings confirm that the lack of both public transportation and cars operated by PHC staff have contributed significantly to the frequent delays in the final report delivery to Lahat District health office. As well, hard-to-navigate terrain presents further obstacles to access. Insufficient funding for operating transportation is construed to add to the current problems.

Technological affordability

Technology applications in each PHC have encountered fundamental challenges that require an immediate solution. This obstacle originates from the unavailability of mobile phone and internet signals:

We only have one laptop and rely on GPRS network with a personal modem and not 3G. There are often no networks. (Head of Pagar Sakti PHC)

In addition, the infrastructure that has long been in place is often disrupted. He continued their testimony:

There is one tower but often not working. The intermittent disruption usually occurs for up to 3 days.

Even though mobile phone signals can be good, difficult terrain limits the provision of infrastructure:

Mobile phone receiving a signal in PHC's are strong enough, but the cable network cannot enter our area (Head of Tanjung Sakti PHC).

Computer operation is also constrained by human resources in every PHC limitations of access to information due to the lack of internet networks that transfer knowledge, challenge the reporting flow.

The Head of the Tanjung Sakti PHC shared him concerns:

We have got three computers from the health service, but lack of human resources who can operate the computer (Head of Tanjung Sakti PHC).

Manual reporting components that depend on data variables were also not reconciled in the field. The situation at the PHC of the Tanjung Sakti Subdistrict is:

Laboratory equipment is incomplete, and there is no analyst. Finally, we employ a nurse as a to work in the lab. Chemicals are also lacking, and laboratory is less regularly used (Head of Tanjung Sakti PHC).

In more detail, the Head of the Tanjung Sakti PHC iterated further that evidence on insufficient input variables within the reporting system:

Clinical symptoms data, data from laboratory results are not comprehensively made available. Complications, treatment, environment (close to river water, housing conditions, home ventilation. We like to identify the origin of the population whether they came over to move in, attend schools, or come from other regions. The availability of the drug is not enough. The case reports, as well as clinical symptoms, are more critical actually (Head of Tanjung Sakti PHC).

On the other hand, labour-intensive manual reporting also impedes the accuracy of data reception at the district level:

> *Reporting delays are caused by manual systems maintained, and the amount of human resources to compile reports is still low (Head of Tanjung Sakti PHC).*

The lack of funds for procuring new computers is also a point to note before on-line reporting is applied in the field. They continued:

> *If online reporting is applied, then we are constrained by the inadequate funding issue of buying a computer.*

Technological affordance is complex and multi-layered. As described in the narrative, some of the problems that need to be immediately resolved are the access to internet signals and mobile phone receivers, providing the number of computers according to requirements and providing well-trained staff at every PHC.

Expectation

The experience of the PHCs in the Lahat District depicts the limitations of malaria handling and monitoring, despite being handled with standard procedures, which have long been locally practised and run by health professionals at the district, village, and subdistrict levels. Institutional support in the form of technological innovation is yet to be implemented at the local level but is expected to be applied sooner rather than later to remove limitations in the reporting. Such a situation puts the PHC under pressure to utilise on-line reporting in the field:

> *With this online reporting, we will be able to report to the health centre in Lahat District (Head of Pagar Jati PHC).*

On the other hand, the speed of handling is the highest expectation observed in the results of the online reporting design:

Later on, if the reporting system is running fast, the problems we face will get a rapidly responsive solution as well (Head of Tanjung Sakti PHC).

At a higher level, accurate policy-making is desirable and used to support the professionalism of the surveillance officers each month:

If there is an extraordinary occurrence of malaria from surveillance reports, immediate evaluation and action can be undertaken. With online reporting system, the PHC can be involved in higher-level policy-making (Head of Fajar Bulan PHC).

The implementation of on-line reporting cannot be instantaneous. It needs a transition period that allows for a smooth transformation from paper-based mechanisms to the internet-based system. The Head of the Fajar Bulan PHC echoed:

The reporting system is not a problem because it does not require electricity in the process. It just needs to be modernised so that reporting is not complicated (Head of the Fajar Bulan PHC).

This narrative indicates that the modernisation of reporting via the internet is indispensable, but also that the manual reporting must be condensed. A fatal case of malaria treatment at the local level is typical; such cases would be a "*red alert*" for the high-level institutions at the district level. This would prompt them to formulate prevention policy for the concerned area more evenly and quickly. The fact that the Tanjung Sakti Subdistrict had an outbreak is a priority case to be addressed:

Moreover, online reporting played a significant role in Lahat DHO. PHC's are supportive if there is an online reporting system because the information submitted to the health service will be faster, primarily when outbreaks are found out. Delays are fatal, because if at the district *level late it will be difficult to handle at the provincial level (Head of Tanjung Sakti PHC)*

This narrative reveals the urgent demand for implementing on-line reporting for the Tanjung Sakti Subdistrict to deal with outbreaks. Despite high demand of the PHC's for creating and implementing an on-line reporting system, the accessibility of internet signals in the field still concerns policymakers at the PHC level in those subdistricts. The Head of the Fajar Bulan PHC welcomed the application of Joomla as an on-line reporting system for malaria eradication:

> *Joomla, as part of the malaria eradication program, is excellent, but unfortunately, there is no internet connection those living in remote areas. So, if you want to employ IT staffs for it, the infrastructure also needs to be improved (Head of Fajar Bulan PHC).*

This technological innovation is an intrinsic product of knowledge development. The Head continued with optimism, *"This kind of program is quite well implemented as the science progresses".*

Development and testing of web-based MRIS

Data analysis uses the System Development Life Cycle (SDLC) approach methodology, which is one of the methods in software development. System Design conducted in the Laboratory of Health Informatics, Universitas Indonesia in Jakarta. Components of the prototype feasibility test used in this study is shown in S1 Table

S1 Table

Web-based of MIRS has a database that can be accessed quickly, from the results of this access speed test depends on the capacity of the hardware that supports the system. The ability of the kind of MRIS to store data in real-time must be supported by input security features which must still be upgraded. Some of these advantages of web-based of MIRS developments strengthen recording and reporting capabilities at the district level.

Discussion

Our study indicated that the paper-based MRIS is inefficient or ineffective because some reasons mainly related to accessibility and mobility, technological affordability, and expectation. We recommend that the manual paper-based model should be replaced with an electronic reporting system. The web-based reporting system using Joomla is one of feasible alternative to accelerate collecting and analysing malaria incidence data in the DHO. So, to bring this web-based system to the customer is requiring human resources management and training and enhancing network infrastructure, which refers to the composite software and hardware, including network resources and services.

The web-based reporting system using Joomla system has several benefits. A major advantage is that the form can be upgraded by including modules developed in many applications by other information and communications technology (ICT) system developers and uploaded on various open-access sites. The open-source programming language was first released in 2005 and has seen upgrades since then, but remains a free, open source system that can be used for a MRIS. It will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields. The applications are resistant to computer viruses, which could otherwise significantly impair the system. The development of information systems using an open-source system also facilitates the development of an interdisciplinary model to maximize the scope of the application [19].

However, the implementation of the web-based reporting system using Joomla is limited due to lack of internet access and infrastructure and these must be improved and made reliable, with priority to remote areas. To realise the benefits of the internet, the government should forge a partnership with state telecommunication companies to build internet installations [20]. By the cooperation in building internet installation would address expectations of Head of PHCs for

increased speed of data handling resulting from recent technological advances that would be provided by the on-line reporting system. More generally, making a web application or Short Message Service (SMS) gateway can supply feedback in the form of a decision based on the standards for the prevention and eradication of diseases [21]. A study in Papua New Guinea demonstrated that the use of mobile technologies and Geographical Information System (GIS) in capturing and reporting of national health information system (NHIS) data provides timely, high quality, geocoded, case-based malaria data, useful for malaria elimination [22]. Similarly, the data system encouraging malaria elimination involves: quick and comprehensive case reporting, integration of associated knowledge such as a health information system, automatic and skilled info analysis, and tailor-made outputs and comments that contribute to timely and targeted solutions [23].

At a higher level, accurate policy-making should support the professionalism of the surveillance officers each month. Training is a critical component of this. Access to training and support, and availability of hardware including computer and system receivers is critical [20][24]. An appropriate number of staff who are medically informed and technologically competent are urgently required to solve the problems identified in the research [25]. As an example, according to the problems reported in the present research, health offices need to identify the priorities for improving the skills of medical personnel using web-based MRIS, the distribution of stable internet connections, including the availability of standardised computers, the provision of transportation facilities, and obtaining sufficient budget arrangements in every PHC. Acceptability of the reporting process is crucial from PHC to DHO. All stakeholders' needs should be identified with the role of each actor in the PHC's including Head of PHC's, the coordinator of district disease prevention and control program, and district malaria officers. The involvement of each actor is essential to ensure flexibility [26], sustainability and innovation of web-based reporting [27].

Using the CMS Joomla system users can quickly obtain information about the surveillance and services existing across activities, particularly regarding the area-based management of malaria eradication. Thus, the malaria situation in an area can be determined through the collection of precise data to help determine countermeasures as soon as possible. This would create up-to-date, and accurate information which help provide efficient and effective decision-making. A reliable and useable surveillance system is essential for malaria elimination as demonstrated in the following two studies. Globally, the mapping of the distribution of malaria was able to capture at-risk population groups to control malaria transmission [29]. In Vietnam, the health information systems development was a critical component of disease control, crucial for disease risk assessment, formulation, and evaluation of priority of different interventions in the cost-effectiveness of malaria cases more than ten years ago [30]. Bhutan's experience of integrating web-based and mobile technology to map data surveillance and generate real-time reports should be taken as the best example for speeding the country-level decision-making process and reducing malaria rates [28].

Finally, the elimination of malaria can be achieved not only with the key early and effective treatment, the prompt and accurate diagnosis of malaria, and rapid diagnostic tests (RDTs), but also by the strengthening of MRIS that is facilitated by training and accurate information gathering, including increased awareness and the utilisation of insecticide-treated mosquito nets [31-33].

Conclusions

Our study indicates that the current paper-based MRIS in Indonesia is suboptimal because of the complexity and difficulties in handling reporting MRIS manually. This can be remedied by implementing the web-based MRIS. The implementation of a web-based reporting system

using Joomla will potentially improve malaria reporting and management and it therefore could accelerate the progress of malaria elimination in Indonesia.

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Authors' original submitted files

Figure legends

Figure 1: Map of the study areas (with permission from the Indonesian the Geospatial Information Agency (BIG))

Figure 2: Data flow diagram (DFD) indicating the functionality of the information systems for web-based malaria reporting.

Supporting information

S1 Appendix: Detailed instrument of study for in-depth interview

S2 Appendix: Detailed processes on how to run the web-based MRIS

S1 Table: Components of the prototype feasibility test

Figure 1

Click here to access/download;Figure;1_fig.png

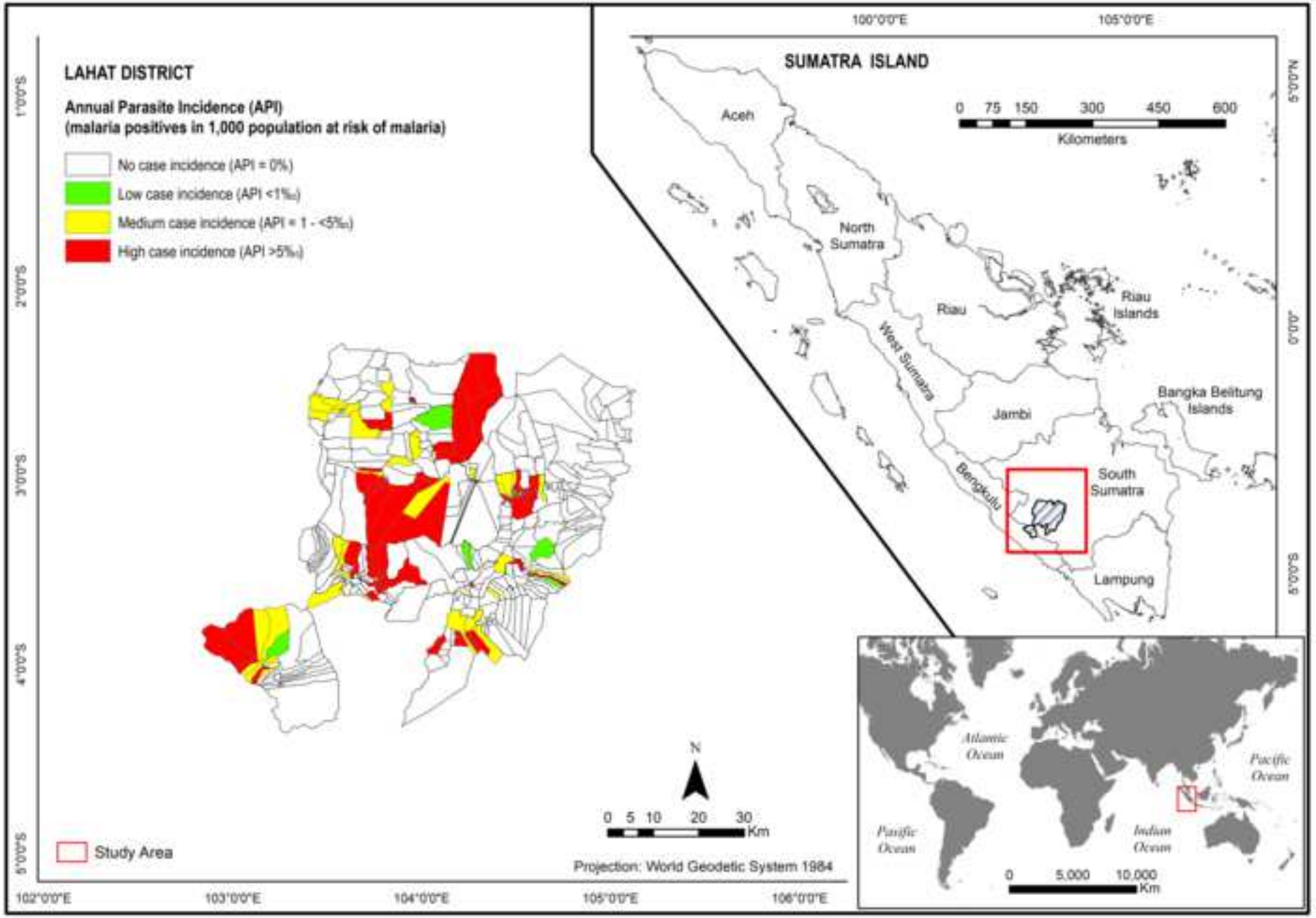

Figure 2

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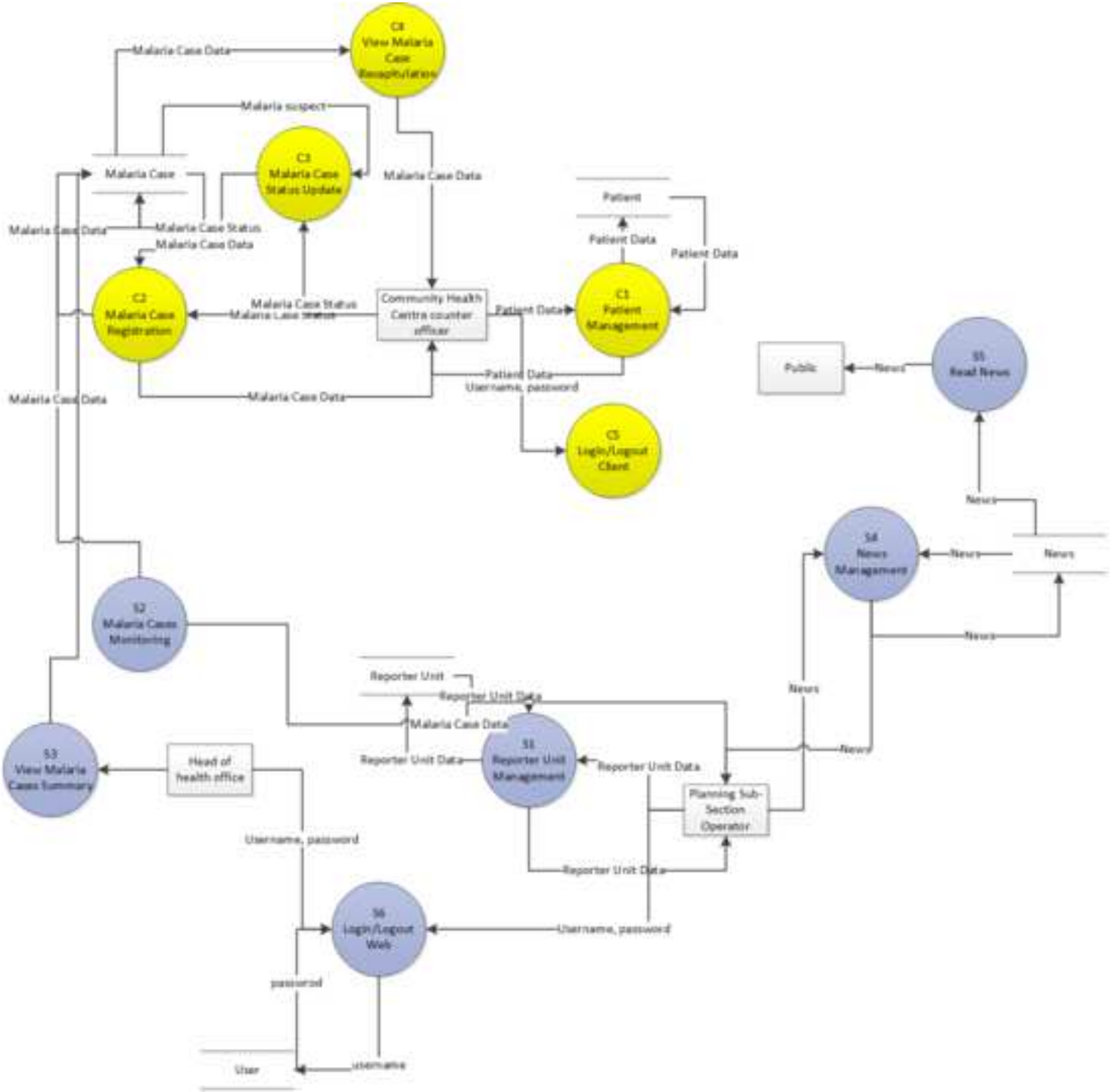

Supporting Information 1

Click here to access/download
Supporting Information
S2 Appendix.docx

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Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia

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Abstract

Background: A web-based malaria reporting information system (MRIS) has the potential to improve malaria reporting and management. The aim of this study was to evaluate the existing manual paper-based MRIS and to provide a way to overcome the obstacles by developing a web-based MRIS in Indonesia.

Methods: An exploratory study was conducted in 2012 in Lahat District, South Sumatra Province of Indonesia. We evaluated the current reporting system and identified the potential benefits of using a web-based MRIS by in-depth interviews on selected key informants. Feasibility study was then conducted to develop a prototype system. A web-based MRIS was developed, integrated and synchronized, with suitability ranging from Primary Healthcare Centres (PHCs) to the Lahat District Health Office.

Results: The paper-based reporting system was sub-optimal due to a lack of transportation, communication, and human capacity. We developed a web-based MRIS to replace the current one. Although the web-based system has the potential to improve the malaria reporting information system, there were some barriers to its implementation, including lack of skilled operators, computer availability and lack of internet access. Recommended ways to overcome the obstacles are by training operators, making the application in an offline mode and able to be operated by mobile phone text messaging for malaria reporting.

Conclusion: The web-based MRIS has the potential to be implemented as an enhanced malaria reporting information system and investment in the system to support timely management responses is essential for malaria elimination. The developed application can be cloned to other areas that have similar characteristics and MRIS with a built-in web base to aid its application in the 5G future.

Introduction

Malaria is a public health problem in tropical and sub-tropical countries which associated with high morbidity and mortality, particularly in vulnerable groups [1, 2]. In 2017, it was estimated there were 219 million malaria cases globally, most of the cases occurred in Africa (200 million or 92%), followed by South-East Asia and the East Mediterranean region [3]. In Indonesia, the national government aims to eliminate malaria from the country by 2030 [4]. However, malaria is still a major public health problem in the country including in the Lahat District of South Sumatra Province. In 2012, the Annual Parasite Incidence (API) of malaria in Lahat District was 4.69 per 1,000 population [5]. The API is the most commonly used indicator for estimating the actual intensity of malaria transmission [6, 7]. Some determinants of malaria in the Lahat District have been identified including the proximity of breeding places of *Anopheles* mosquitoes to human settlement [8], as well as environmental factors that affect mosquitoes [9].

In the 1980s, the Ministry of Health (MoH) of Indonesia developed a paper-based integrated health centre reporting system, called *Sistem Pencatatan dan Pelaporan Tingkat Puskesmas* (SP2TP). However, after the implementation of the decentralization policy in 2004, the quality of and support for the health information system in each district and city decreased [10, 11]. This paper-based reporting system has not been well integrated into each health service unit such as in Primary Healthcare Centre (PHC) and District Health Office (DHC). Problems arise from the central, provincial and district/city governments in harmonizing policy implementation, including the synchronization, structuring and development of health information systems, and the commitment of regional governments to provide operational costs to implement essential health services [12]. Although online health information systems

(OHIS) were established by the MoH in 2011, several factors have led to their failure and these are investigated in this paper. Because of delays in malaria reporting in endemic areas in the country, local transmission can increase as a result of late intervention in vector control and contact transmission surveys [13]. Therefore, it is essential to develop a rapid and accurate reporting system using a web-based malaria reporting information system (MRIS) by adopting open-source systems such as Joomla. Such a reporting system is consistent with the World Health Organization (WHO) guidelines for malaria elimination strongly advocating malaria surveillance and strengthening of the malaria information systems [14].

This study had two research questions: (a) What is the state of the current paper-based recording system for malaria? And (b) Is there a potential for improvement using a web-based system? Therefore, the primary objective of this study was to evaluate the existing manual paper-based MRIS including to assess the barriers in using it Lahat District of Indonesia. The secondary objective was to develop and implement an integrated web-based MRIS utilising the content management system (CMS) Joomla in order to enhance malaria reporting system.

Methods

Study site and study design

Lahat District, an endemic malaria area in South Sumatra Province, is located between 1°46′ and 4°55′ of Southern Latitude and between 102°4′ and 104°41′ of Eastern Longitude and has a total surface area of 46,377.40 km^2 (Fig.1). The Aeronautical Reconnaissance Coverage Geographic Information System (ArcGIS) software v10.3.1 was used for mapping, processing, analysing, and visualisation of the data set, and the World Geodetic System 1984 (WGS84) was used as the references coordinate system.

Figure 1

An exploratory study using in-depth interview approach was conducted in 2012 among the PHC directors and stakeholders who worked on malaria prevention and control program in the DHO of Lahat District. The interviews were conducted by investigators and aided by Public Health students. During the interview, documents related to the current paper-based MRIS were assessed including active and passive malaria surveillance documents, human resources, facilities, and related infrastructure document. In the next phase, a prototype of a web-based of MRIS was developed. In the final stage, prototype MRIS was tested by researcher who expertise in system information where it was integrated and synchronised ranging from the PHCs to the DHO.

Key informant interviews

Interviews were conducted to obtain the perceptions of six key informants in Lahat District on using a paper-based MRIS, their perception of the need for a web-based MRIS, and their suggestions for MRIS development. Purposive sampling was employed to select the informants according to pre-determined categories, based on their knowledge and experience of using a MRIS. The key informants included the Heads of PHCs, the Coordinator of District disease prevention and control program, and District malaria officer who are directly engaged in the malaria program. The interviews were conducted by two researchers and helped by two undergraduate students of the Faculty of Public Health Sriwijaya University as enumerators who have been trained between June to July 2012. The training consisted of introducing data collection instruments, probing skills, recording responses, and transcription of records. Audio-tape and notes were recorded by all interviewers. The average time spent on each interview

was approximately 30 minutes. The structured in-depth interviewing guidance is given in Supporting Information S1.

Analysis of qualitative data

Interview recordings were transcribed after the fieldwork. Themes were produced based on the following: (a) the MRIS which was used; (b) problems encountered in the paper-based MRIS activities and; (c) suggestions for the design and development of a web-based MRIS. The transcripts were then revalidated, and the transcribed notes were entered into the computer. The interview responses were further simplified by coding in order to organise, systematise the data and construct a picture of the topic [15]. In this study, the researcher used phrases, for example, "*accessibility and mobility*", "*technological affordability*", and "e*xpectation*" to represent the essence of the data segment. The computer transcript of every response was inspected for themes and compared with other interviewees to identify repetition words, relevant texts, and phrases. The variety of opinions and views of the interviewees collectively with their recognised related verbatim quotes were used to produce a narrative and outline of the findings.

Development and testing of the web-based MRIS

Based on input from the informants in the review, we developed a prototype web-based MRIS at Sriwijaya University in Palembang utilising the content management system (CMS) Joomla. The information from in-depth interviews was synthesised and used as requirements of the basis for designing the system features. The final prototype was tested for its feasibility in the Laboratory of Health Informatics, Universitas Indonesia in Jakarta. The web-based MRIS was synchronised in one of sample Primary Healthcare Centres (PHCs) to the Lahat District Health Office.

151 The MRIS was developed using a methodology Framework for the Application of Systems
152 Techniques (FAST), a variation of the System Development Life Cycle (SDLC) [16-18]. FAST
153 has an appropriate way of standardisation and has a stable process for understanding the system
154 and for management planning. FAST consists of the following steps: (1) definition of the scope;
155 (2) analysis of the problem; (3) analysis of needs; (4) the logic of design; (5) review of the
156 decision; (6) physical design; (7) construction and testing; and (8) installation and delivery.
157 The framework presents a general approach to a modular design that was the first stage of the
158 SDLC. The data flow diagram of the developed web-based MRIS is presented in Fig.2.
159 Detailed processes to operate the MRIS are provided in Supporting Information S2.
160

161 **Figure 2**
162

163 ## Ethical considerations

164 The study was approved by the Research Institute of Sriwijaya University
165 (168.a/UN9.3.1/PL/2012). Participation was voluntary in this research, and there was no
166 financial incentive. The respondents provided written informed consent prior to participation.
167

168 # Results

169 # Evaluation of the existing paper-based MRIS

170 To evaluate the existing paper-based MRIS, in-depth interviews were conducted in six key
171 informants in Lahat District. The results from this study were used as to develop new MRIS.
172

Characteristics of the key informants

We conducted a qualitative research study using in-depth interviews with a purposive sample of Heads of PHCs, the Coordinator of District disease prevention and control program, and District malaria officer. Using a non-probabilistic purposive sampling technique, we conducted interviews for six key informants. The type of key informant (e.g. policy-maker, epidemiologist) formed the unit of analysis. It served as the critical identifier allowing us to compare the perspectives of the kinds of informants. The characteristics of demographic variables from the key informants consist of five males and one female, who average on an age of 35 years old and five years duration of work that they have been in malaria elimination program at Lahat DHO. Besides that, the characteristics of participants in an education degree, one participant has a master education and others a bachelor degree in a public health program. Key informant interviews allowed us to solicit in-depth and candid opinions of a broad range of stakeholders effectively. Furthermore, qualitative research can identify rich narratives and lived experiences not captured in quantitative analysis and does make assumptions about MRIS literacy of respondents.

Main concerns related to existing paper-based MRIS

There were three main areas of concern raised by the informants: accessibility and mobility; technological affordability and expectation. The general overview from the research revealed weaknesses in the paper-based MRIS such as the difficulty of compiling and distributing paper-based reports due to transport issue. In in-depth interviews, the informants revealed their perceptions and experiences when using the paper-based MRIS. Their statements reflect complexity and delay in reporting malaria cases to DHO. Labour-intensive manual reporting impedes the accuracy of data reception at the district level.

Limitations of access to information challenges the reporting flow. Human capacity is a constraint, especially in computer operation. In every PHC, the lack of a skilled official is a real obstacle.

In summary, problems and difficulties encountered identify the potential benefit of and an urgent need for a web-based online open-source of MRIS. The main problems are: (a) difficulty in mobility and accessibility; (b) technology affordability; and (c) expectation. For all these issues there is a need for an urgent solution. The issues are described below using the direct reports of respondents in the three key areas.

Accessibility and mobility

In manual reporting, the speed of delivering data from the PHC to the DHO can determine the policy output at the provincial level but is impeded by the lack of transport facilities. In the Pagar Jati PHC, for instance, the reporting activities were run by the Head of the Administrative Office. Data reporting was sent out before the 5th of every month. However, the subsequent information flow was also affected. The reporting format for malaria disease was separate from the template format provided by the Lahat DHO. Some of them were around its link-up with the PHC assessment and report of the SP2TP. The reporting process was completed manually for 2-3 days, this was subsequently recapitulated by the Diseases Prevention and Control (P2P). However, insufficient transport contributed to the inadequacies of and delays in the system:

> *The shortcomings of the manual reporting system to Lahat DHO from Pagar Jati PHC is accessibility like (means of transportation that only operate once a day). The distance between* Pagar Jati *PHC to DHO is 45 km with 1.5-hour trip, and the car only out once a day at 7-12. (Head of Pagar Jati PHC).*

Transportation facilities that were unable to extend to the Lahat District health office from the PHC office also caused delays:

For surveillance activities, it has been done routinely and conducted by P2P officers. In addition to the data collecting, P2P officers perform data processing before it is expedited to Lahat District *health office. Reporting of malaria data at Tanjung Sakti PHC usually refers to the form provided by Lahat* District *health office and finished before the 5th of each month. Constraints the staff overcome during the reporting is the risk of delay in delivery of reports. (Head of Tanjung Sakti PHC).*

The monitoring process in the Fajar Bulan Subdistrict also experienced delays due to the long distance. The lack of transportation facilities also curtailed the delivery of final reports:

Given a wide working area, it may take a long time in the surveillance process. Also, there is a delay in the process of collecting reports because the officer must travel for 2.5 hours or 67 kilometres to Lahat DHO.

The findings confirm that the lack of both public transportation and cars operated by PHC staff have contributed significantly to the frequent delays in the final report delivery to Lahat District health office. As well, hard-to-navigate terrain presents further obstacles to access. Insufficient funding for operating transportation is construed to add to the current problems.

Technological affordability

Technology applications in each PHC have encountered fundamental challenges that require an immediate solution. This obstacle originates from the unavailability of mobile phone and internet signals:

We only have one laptop and rely on GPRS network with a personal modem and not 3G. There are often no networks. (Head of Pagar Sakti PHC)

In addition, the infrastructure that has long been in place is often disrupted. He continued their testimony:

There is one tower but often not working. The intermittent disruption usually occurs for up to 3 days.

Even though mobile phone signals can be good, difficult terrain limits the provision of infrastructure:

Mobile phone receiving a signal in PHC's are strong enough, but the cable network cannot enter our area (Head of Tanjung Sakti PHC).

Computer operation is also constrained by human resources in every PHC limitations of access to information due to the lack of internet networks that transfer knowledge, challenge the reporting flow.

The Head of the Tanjung Sakti PHC shared him concerns:

We have got three computers from the health service, but lack of human resources who can operate the computer (Head of Tanjung Sakti PHC).

Manual reporting components that depend on data variables were also not reconciled in the field. The situation at the PHC of the Tanjung Sakti Subdistrict is:

Laboratory equipment is incomplete, and there is no analyst. Finally, we employ a nurse as a to work in the lab. Chemicals are also lacking, and laboratory is less regularly used (Head of Tanjung Sakti PHC).

In more detail, the Head of the Tanjung Sakti PHC iterated further that evidence on insufficient input variables within the reporting system:

Clinical symptoms data, data from laboratory results are not comprehensively made available. Complications, treatment, environment (close to river water, housing conditions, home ventilation. We like to identify the origin of the population whether they came over to move in, attend schools, or come from other regions. The availability of the drug is not enough. The case reports, as well as clinical symptoms, are more critical actually (Head of Tanjung Sakti PHC).

On the other hand, labour-intensive manual reporting also impedes the accuracy of data reception at the district level:

> *Reporting delays are caused by manual systems maintained, and the amount of human resources to compile reports is still low (Head of Tanjung Sakti PHC).*

The lack of funds for procuring new computers is also a point to note before on-line reporting is applied in the field. They continued:

> *If online reporting is applied, then we are constrained by the inadequate funding issue of buying a computer.*

Technological affordance is complex and multi-layered. As described in the narrative, some of the problems that need to be immediately resolved are the access to internet signals and mobile phone receivers, providing the number of computers according to requirements and providing well-trained staff at every PHC.

Expectation

The experience of the PHCs in the Lahat District depicts the limitations of malaria handling and monitoring, despite being handled with standard procedures, which have long been locally practised and run by health professionals at the district, village, and subdistrict levels. Institutional support in the form of technological innovation is yet to be implemented at the local level but is expected to be applied sooner rather than later to remove limitations in the reporting. Such a situation puts the PHC under pressure to utilise on-line reporting in the field:

> *With this online reporting, we will be able to report to the health centre in Lahat District (Head of Pagar Jati PHC).*

On the other hand, the speed of handling is the highest expectation observed in the results of the online reporting design:

Later on, if the reporting system is running fast, the problems we face will get a rapidly responsive solution as well (Head of Tanjung Sakti PHC).

At a higher level, accurate policy-making is desirable and used to support the professionalism of the surveillance officers each month:

If there is an extraordinary occurrence of malaria from surveillance reports, immediate evaluation and action can be undertaken. With online reporting system, the PHC can be involved in higher-level policy-making (Head of Fajar Bulan PHC).

The implementation of on-line reporting cannot be instantaneous. It needs a transition period that allows for a smooth transformation from paper-based mechanisms to the internet-based system. The Head of the Fajar Bulan PHC echoed:

The reporting system is not a problem because it does not require electricity in the process. It just needs to be modernised so that reporting is not complicated (Head of the Fajar Bulan PHC).

This narrative indicates that the modernisation of reporting via the internet is indispensable, but also that the manual reporting must be condensed. A fatal case of malaria treatment at the local level is typical; such cases would be a "*red alert*" for the high-level institutions at the district level. This would prompt them to formulate prevention policy for the concerned area more evenly and quickly. The fact that the Tanjung Sakti Subdistrict had an outbreak is a priority case to be addressed:

Moreover, online reporting played a significant role in Lahat DHO. PHC's are supportive if there is an online reporting system because the information submitted to the health service will be faster, primarily when outbreaks are found out. Delays are fatal, because if at the district *level late it will be difficult to handle at the provincial level (Head of Tanjung Sakti PHC)*

This narrative reveals the urgent demand for implementing on-line reporting for the Tanjung Sakti Subdistrict to deal with outbreaks. Despite high demand of the PHC's for creating and implementing an on-line reporting system, the accessibility of internet signals in the field still concerns policymakers at the PHC level in those subdistricts. The Head of the Fajar Bulan PHC welcomed the application of Joomla as an on-line reporting system for malaria eradication:

> *Joomla, as part of the malaria eradication program, is excellent, but unfortunately, there is no internet connection those living in remote areas. So, if you want to employ IT staffs for it, the infrastructure also needs to be improved (Head of Fajar Bulan PHC).*

This technological innovation is an intrinsic product of knowledge development. The Head continued with optimism, *"This kind of program is quite well implemented as the science progresses".*

Development and testing of web-based MRIS

Data analysis uses the System Development Life Cycle (SDLC) approach methodology, which is one of the methods in software development. System Design conducted in the Laboratory of Health Informatics, Universitas Indonesia in Jakarta. Components of the prototype feasibility test used in this study is shown in S1 Table

S1 Table

Web-based of MIRS has a database that can be accessed quickly, from the results of this access speed test depends on the capacity of the hardware that supports the system. The ability of the kind of MRIS to store data in real-time must be supported by input security features which must still be upgraded. Some of these advantages of web-based of MIRS developments strengthen recording and reporting capabilities at the district level.

Discussion

Our study indicated that the paper-based MRIS is inefficient or ineffective because some reasons mainly related to accessibility and mobility, technological affordability, and expectation. We recommend that the manual paper-based model should be replaced with an electronic reporting system. The web-based reporting system using Joomla is one of feasible alternative to accelerate collecting and analysing malaria incidence data in the DHO. So, to bring this web-based system to the customer is requiring human resources management and training and enhancing network infrastructure, which refers to the composite software and hardware, including network resources and services.

The web-based reporting system using Joomla system has several benefits. A major advantage is that the form can be upgraded by including modules developed in many applications by other information and communications technology (ICT) system developers and uploaded on various open-access sites. The open-source programming language was first released in 2005 and has seen upgrades since then, but remains a free, open source system that can be used for a MRIS. It will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields ~~The open-source programming language will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields.~~ The applications are resistant to computer viruses, which could otherwise significantly impair the system. The development of information systems using an open-source system also facilitates the development of an interdisciplinary model to maximize the scope of the application [19].

However, the implementation of the web-based reporting system using Joomla is limited due to lack of internet access and infrastructure and these must be improved and made reliable, with priority to remote areas. To realise the benefits of the internet, the government should forge a

partnership with state telecommunication companies to build internet installations [20]. By the cooperation in building internet installation would address expectations of Head of PHCs for increased speed of data handling resulting from recent technological advances that would be provided by the on-line reporting system. More generally, making a web application or Short Message Service (SMS) gateway can supply feedback in the form of a decision based on the standards for the prevention and eradication of diseases [21]. A study in Papua New Guinea demonstrated that the use of mobile technologies and Geographical Information System (GIS) in capturing and reporting of national health information system (NHIS) data provides timely, high quality, geocoded, case-based malaria data, useful for malaria elimination [22]. Similarly, the data system encouraging malaria elimination involves: quick and comprehensive case reporting, integration of associated knowledge such as a health information system, automatic and skilled info analysis, and tailor-made outputs and comments that contribute to timely and targeted solutions [23].

At a higher level, accurate policy-making should support the professionalism of the surveillance officers each month. Training is a critical component of this. Access to training and support, and availability of hardware including computer and system receivers is critical [20][24]. An appropriate number of staff who are medically informed and technologically competent are urgently required to solve the problems identified in the research [25]. As an example, according to the problems reported in the present research, health offices need to identify the priorities for improving the skills of medical personnel using web-based MRIS, the distribution of stable internet connections, including the availability of standardised computers, the provision of transportation facilities, and obtaining sufficient budget arrangements in every PHC. Acceptability of the reporting process is crucial from PHC to DHO. All stakeholders' needs should be identified with the role of each actor in the PHC's including Head of PHC's, the coordinator of district disease prevention and control program, and district malaria officers.

394 The involvement of each actor is essential to ensure flexibility [26], sustainability and
395 innovation of web-based reporting [27].
396 Using the CMS Joomla system users can quickly obtain information about the surveillance and
397 services existing across activities, particularly regarding the area-based management of malaria
398 eradication. Thus, the malaria situation in an area can be determined through the collection of
399 precise data to help determine countermeasures as soon as possible. This would create up-to-
400 date, and accurate information which help provide efficient and effective decision-making. A
401 reliable and useable surveillance system is essential for malaria elimination as demonstrated in
402 the following two studies. Globally, the mapping of the distribution of malaria was able to
403 capture at-risk population groups to control malaria transmission [29]. In Vietnam, the health
404 information systems development was a critical component of disease control, crucial for
405 disease risk assessment, formulation, and evaluation of priority of different interventions in the
406 cost-effectiveness of malaria cases more than ten years ago [30]. Bhutan's experience of
407 integrating web-based and mobile technology to map data surveillance and generate real-time
408 reports should be taken as the best example for speeding the country-level decision-making
409 process and reducing malaria rates [28].
410 Finally, the elimination of malaria can be achieved not only with the key early and effective
411 treatment, the prompt and accurate diagnosis of malaria, and rapid diagnostic tests (RDTs), but
412 also by the strengthening of MRIS that is facilitated by training and accurate information
413 gathering, including increased awareness and the utilisation of insecticide-treated mosquito
414 nets [31-33].
415

Conclusions

Our study indicates that the current paper-based MRIS in Indonesia is suboptimal because of the complexity and difficulties in handling reporting MRIS manually. This can be remedied by implementing the web-based MRIS. The implementation of a web-based reporting system using Joomla will potentially improve malaria reporting and management and it therefore could accelerate the progress of malaria elimination in Indonesia.

Acknowledgements

All authors wish to thank the Head of the Geospatial Information Agency (BIG) Indonesia for access to the digitised map, which uses in this paper. Authors would like to thank to the Head of Lahat District Health Office and the staffs for the support and to allow the authors to conduct the study. And we acknowledge the constructive comments of the reviewers.

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Authors' original submitted files

Figure legends

Figure 1: Map of the study areas (with permission from the Indonesian the Geospatial Information Agency (BIG))

Figure 2: Data flow diagram (DFD) indicating the functionality of the information systems for web-based malaria reporting.

Supporting information

S1 Appendix: Detailed instrument of study for in-depth interview

S2 Appendix: Detailed processes on how to run the web-based MRIS

S1 Table: Components of the prototype feasibility test

Response letter to the review of PONE-D-19-28423R1, Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia. PLOS ONE

Dear
Luzia Helena Carvalho, Ph.D.
Academic Editor
PLOS ONE

Please find below our response to reviewer 2.

Sincerely,

Hamzah Hasyim (on behalf of all authors)

Reviewer's Responses to Questions

Reviewer #1: (No Response)

Reviewer #2: The authors have addressed all concerns by the reviewers, and I would recommend publication in this current form. If it is possible, the authors should include the current status of the Web-based system (since surveys were implemented in 2012) and the benefit it brings

Response:

Thank you for your very helpful feedback. The open-source programming language was first released in 2005 and has seen upgrades since then, but remains a free, open source system that can be used for a MRIS. It will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields. In our future research we plan to extend the study for the optimization of malaria surveillance information systems through the application of the android mobile geospatial information system (GIS) in endemic area Lahat District, South Sumatra Province in 2020.

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

PLOS ONE Decision: Revision required [PONE-D-19-28423]

1 message

Hamzah Hasyim <hamzah.hasyim@gmail.com> 8 November 2019 at 05:42
To: "Prof. Dr. rer. nat. Ruth Müller" <Ruth.Mueller@med.uni-frankfurt.de>, "Prof. Dr. Dr. h.c. mult. David Groneberg" <groneberg@med.uni-frankfurt.de>, "Dr. Ulrich Kuch" <kuch@med.uni-frankfurt.de>

Dear Dr Ruth,

I am pleased to inform you that the academic editor and reviewer(s) of PLOS One had reviewed our paper, kindly see the message below.

The supporting document S2, in-depth Interviewing Guidance will be added. When submitting the script, this file is not included. At the moment, I had made a draft rebuttal letter as a response to each point raised by the academic editor and reviewers). Please, find attached.

Meanwhile, I try to complete rebuttal letter and the identity each of the key informant. Please provide any additional comments.

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Sincerely yours,

Hamzah

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PONE-D-19-28423
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.
PLOS ONE

Dear Dr Hamzah Hasyim,

TThank you for submitting your manuscript to PLoS ONE. After careful consideration, we felt that your manuscript requires revision, following which it can possibly be reconsidered. Although your manuscript was of interest to the reviewers, a major concern was related to the research purpose. As quoted by the reviewer, it seems not clear what type of question the authors are trying to answer. Additionally, a number of methodological concerns should be clarified otherwise it my compromise the manuscript. Introduction, methods and discussion should be revised to avoid some repetitive contents.
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Kind regards,

Luzia Helena Carvalho, Ph.D.
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Reviewers' comments:

Reviewer's Responses to Questions

Comments to the Author

1. Is the manuscript technically sound, and do the data support the conclusions?

The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #1: Yes

Reviewer #2: No

---

2. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #1: N/A

Reviewer #2: N/A

---

3. Have the authors made all data underlying the findings in their manuscript fully available?

The PLOS Data policy requires authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception (please refer to the Data Availability Statement in the manuscript PDF file). The data should be provided as part of the manuscript or its supporting information, or deposited to a public repository. For example, in addition to summary statistics, the data points behind means, medians and variance measures should be available. If there are restrictions on publicly sharing data—e.g. participant privacy or use of data from a third party—those must be specified.

Reviewer #1: No

Reviewer #2: Yes

---

4. Is the manuscript presented in an intelligible fashion and written in standard English?

PLOS ONE does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors here.

Reviewer #1: Yes

Reviewer #2: Yes

---

5. Review Comments to the Author

Please use the space provided to explain your answers to the questions above. You may also include additional comments for the author, including concerns about dual publication, research ethics, or publication ethics. (Please upload your review as an attachment if it exceeds 20,000 characters)

Reviewer #1: The manuscript is interesting and could be a good lesson learned about malaria (health) system development. There are some issues that should be revised and elaborated as follow:
1. In the methods section, the authors described that the study was carried out among six purposively selected key informants according to pre-determined categories, based on their knowledge and experience of using a malaria reporting information system. But there were no details about such inclusion-exclusion criteria- what it meant by knowledge and experiences. This is important especially for qualitative study to show the credential of key informants. If keeping confidentiality is the concern (but in this case, it may not be so), at least in the results section, the researchers should give certain aggregated statistics about the inclusion-exclusion criteria for the selection of key informants, for examples, %sex, age range, years of experiences working in malaria units, years of using paper-based system, position level, etc.
2. In the introduction section, the authors mentioned that the primary objective of this study was to assess the barriers in using the paper-based MRIS and the secondary purpose was to develop and implement an integrated web-based MRIS. In the methods section, the authors also described procedures to develop and test the web-based system. However, there was nothing in results section about this secondary objective. To be corresponding to the second objective of the study, the authors should describe the results, for examples, how SDLC or FAST processes were conducted to come up with the system; how the information from in-depth interview were synthesized and used as requirements of basis for designing the system features. Last part of the Supplement S1 (Based on input from the informants in the review, a web-based version of the MRIS at the Laha…) could be the part of results section showing how the researchers summarized the system requirements from qualitative data. The authors then should subsequently add the results of the process of system developed, tested and implemented according to the second objective. This will nicely link the two objectives together.
3. Supporting information S1 should present mainly detailed processes on the system features and how to run the web-based MRIS.
4. The manuscript was a bit long, please consider cutting some repetitive contents in introduction, methods and discussion. In the discussion, the authors should discuss only about how the development and testing process and the implementing the final product regarding system/prototype. The discussion part about malaria prevention-control and elimination should be shorten or cut off as it was rather beyond the purposes of the study.
5. Minor comment – in the acknowledgements section, ”I want to extend my sincere gratefulness r all co-authors for collaboration and editing skills in the finalisation of this paper...”, who was “I”? so this is the manuscript of the only one author? Were not all authors taking any important roles in the study? Authorship roles should be considered.

Reviewer #2: In this paper, the authors developed a Web-based system for malaria reporting by using Joomla as a platform to overcome communication issues as stated in the introduction section. This type of work can be found in many previously published papers but there is still merit that can be considered for publication in this journal. The paper is well written and I do have several comments as follows:
1. From my perspective, manuscripts which are submitted to Plos One should address one or more research questions,

so what is (are) the research questions of this paper?
2. If considered a technical paper, you should present the technical design of your system i.e. data model, system architecture…
3. How this system was evaluated by the users ? how many users had tried this system ? and their feedbacks. Since this is a Web-based system, it should be evaluated for its applicability and capability to improve the communication and reporting
4. Quite frankly, the interface is in Indonesian, so I cannot follow what are on the screenshots

---

6. PLOS authors have the option to publish the peer review history of their article (what does this mean?). If published, this will include your full peer review and any attached files.

If you choose “no”, your identity will remain anonymous but your review may still be made public.

Do you want your identity to be public for this peer review? For information about this choice, including consent withdrawal, please see our Privacy Policy.

Reviewer #1: No

Reviewer #2: Yes: Quang-Thanh Bui

[NOTE: If reviewer comments were submitted as an attachment file, they will be attached to this email and accessible via the submission site. Please log into your account, locate the manuscript record, and check for the action link "View Attachments". If this link does not appear, there are no attachment files to be viewed.]

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In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Remove my information/details). Please contact the publication office if you have any questions.

---------- Forwarded message ---------
From: **Harapan Harapan, MD** <harapan@unsyiah.ac.id>
Date: Thu, 7 Nov 2019 at 23:16
Subject: Re: PLOS ONE Decision: Revision required [PONE-D-19-28423] - [EMID:d47abfa3c2131a98]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>, Firdaus <firdaus@unsri.ac.id>, Dr Artha Prabawa <artha@ui.ac.id>, Prof. Dr. med. D. Groneberg <groneberg@med.uni-frankfurt.de>, Dr. Ulrich Kuch <kuch@med.uni-frankfurt.de>, Dr. Ruth Müller <Ruth.Mueller@med.uni-frankfurt.de>, Ruth Müller <rmuller@itg.be>

Hello Pak Hamzah and all,

Here is my edits and suggestions.
I do agree with reviewers suggestions to add the results for development and testing of the web-based reporting system. I tried to revise it based on their suggestions and now the structure of the manuscript is logic already. But some parts need to be added by the first author since I have no data.

I suspect the reviewers have not read the entire manuscript yet.

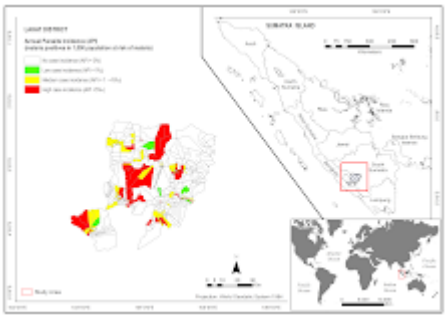
I really recommend to do extensive revision on this manuscript both content and language because there is a chance for rejection in the R1.

Regards,
Harapan

---

8 attachments

Figs 2.png
103K



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S2. In-Depth Interviewing Guidance.docx
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S1. Supporting Information.docx
3648K

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31K

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

PLOS ONE Decision: Revision required [PONE-D-19-28423]

2 messages

Hamzah Hasyim <hamzah.hasyim@gmail.com> 10 November 2019 at 16:52
To: hamzah hamzah <hamzah_hasyim@fkm.unsri.ac.id>, Hamzah Hasyim <hamzah@fkm.unsri.ac.id>

---------- Forwarded message ---------
From: **Hamzah Hasyim** <hamzah.hasyim@gmail.com>
Date: Thu, 7 Nov 2019 at 11:16
Subject: For Prof Pat: PLOS ONE Decision: Revision required [PONE-D-19-28423] - [EMID:d47abfa3c2131a98]
To: Professor Pat Dale <p.dale@griffith.edu.au>

Dear Prof Pat,

I am pleased to inform you that by the academic editor and reviewer(s) had reviewed our paper, kindly see the message below.

Should we make additional information below for Fig I?
The study area map (Fig. 1) uses the World Geodetic System (WGS84) as its reference coordinate system. This Indonesian map is known as Peta Rupabumi Indonesia (RBI) was updated in 2014. This map was obtained from the Geospatial Information Agency (BIG) of Indonesia. We got authorization for the use of the topographical map of Indonesia from BIG and the maps available at http://tanahair.indonesia.go.id/portal-web

Should the file, S2. In-Depth Interviewing Guidance, also need to be added? When submitting this file is not included.

Kindly the documents as attached. Thank you

Please provide further feedback, so that the input of reviewers will appropriately be accommodated and the paper will be published in PLOS One is a peer-reviewed open access scientific journal published by the Public Library of Science (PLOS).

I will also make a rebuttal letter that responds to each point raised by the academic editor and reviewer(s), and I will send you later.

Your significant contribution and participation are much appreciated. Thank you.

Best,

Hamzah

---------- Forwarded message ---------
From: **PLOS ONE** <em@editorialmanager.com>
Date: Thu, 7 Nov 2019 at 00:28
Subject: PLOS ONE Decision: Revision required [PONE-D-19-28423] - [EMID:d47abfa3c2131a98]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.
PLOS ONE

Dear Dr Hamzah Hasyim,

TThank you for submitting your manuscript to PLoS ONE. After careful consideration, we felt that your manuscript requires revision, following which it can possibly be reconsidered. Although your manuscript was of interest to the reviewers, a major concern was related to the research purpose. As quoted by the reviewer, it seems not clear what type of question the authors are trying to answer. Additionally, a number of methodological concerns should be clarified otherwise it my compromise the manuscript. Introduction, methods and discussion should be revised to avoid some repetitive contents.
We would appreciate receiving your revised manuscript by November 30. When you are ready to submit your revision, log on to https://www.editorialmanager.com/pone/ and select the 'Submissions Needing Revision' folder to locate your manuscript file.

If you would like to make changes to your financial disclosure, please include your updated statement in your cover letter.

To enhance the reproducibility of your results, we recommend that if applicable you deposit your laboratory protocols in protocols.io, where a protocol can be assigned its own identifier (DOI) such that it can be cited independently in the future. For instructions see: http://journals.plos.org/plosone/s/submission-guidelines#loc-laboratory-protocols

Please include the following items when submitting your revised manuscript:

- A rebuttal letter that responds to each point raised by the academic editor and reviewer(s). This letter should be uploaded as separate file and labeled 'Response to Reviewers'.
- A marked-up copy of your manuscript that highlights changes made to the original version. This file should be uploaded as separate file and labeled 'Revised Manuscript with Track Changes'.
- An unmarked version of your revised paper without tracked changes. This file should be uploaded as separate file and labeled 'Manuscript'.

Please note while forming your response, if your article is accepted, you may have the opportunity to make the peer review history publicly available. The record will include editor decision letters (with reviews) and your responses to reviewer comments. If eligible, we will contact you to opt in or out.

We look forward to receiving your revised manuscript.

Kind regards,

Luzia Helena Carvalho, Ph.D.
Academic Editor
PLOS ONE

Journal Requirements:

1. When submitting your revision, we need you to address these additional requirements. Please ensure that your manuscript meets PLOS ONE's style requirements, including those for file naming. The PLOS ONE style templates can be found at http://www.journals.plos.org/plosone/s/file?id=wjVg/PLOSOne_formatting_sample_main_body.pdf and http://www.journals.plos.org/plosone/s/file?id=ba62/PLOSOne_formatting_sample_title_authors_affiliations.pdf

2. Please include additional information regarding the survey or interview guide used in the study and ensure that you have provided sufficient details that others could replicate the analyses. For instance, if you developed a guide as part of this study and it is not under a copyright more restrictive than CC-BY, please include a copy, in both the original language and English, as Supporting Information.

3. We note that Figure 1 in your submission contain [map/satellite] images which may be copyrighted. All PLOS content is published under the Creative Commons Attribution License (CC BY 4.0), which means that the manuscript, images, and Supporting Information files will be freely available online, and any third party is permitted to access, download, copy, distribute, and use these materials in any way, even commercially, with proper attribution. For these reasons, we cannot publish previously copyrighted maps or satellite images created using proprietary data, such as Google software (Google Maps, Street View, and Earth). For more information, see our copyright guidelines: http://journals.plos.org/plosone/s/licenses-and-copyright.

We require you to either (1) present written permission from the copyright holder to publish these figures specifically under the CC BY 4.0 license, or (2) remove the figures from your submission:

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We recommend that you contact the original copyright holder with the Content Permission Form (http://journals.plos.org/plosone/s/file?id=7c09/content-permission-form.pdf) and the following text:

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> Please upload the completed Content Permission Form or other proof of granted permissions as an "Other" file with your submission.

In the figure caption of the copyrighted figure, please include the following text: "Reprinted from [ref] under a CC BY license, with permission from [name of publisher], original copyright [original copyright year]."

2. If you are unable to obtain permission from the original copyright holder to publish these figures under the CC BY 4.0 license or if the copyright holder's requirements are incompatible with the CC BY 4.0 license, please either i) remove the figure or ii) supply a replacement figure that complies with the CC BY 4.0 license. Please check copyright information on all replacement figures and update the figure caption with source information. If applicable, please specify in the figure caption text when a figure is similar but not identical to the original image and is therefore for illustrative purposes only.

> The following resources for replacing copyrighted map figures may be helpful:
>
> USGS National Map Viewer (public domain): http://viewer.nationalmap.gov/viewer/
>
> The Gateway to Astronaut Photography of Earth (public domain): http://eol.jsc.nasa.gov/sseop/clickmap/
>
> Maps at the CIA (public domain): https://www.cia.gov/library/publications/the-world-factbook/index.html and https://www.cia.gov/library/publications/cia-maps-publications/index.html

NASA Earth Observatory (public domain): http://earthobservatory.nasa.gov/

> Landsat: http://landsat.visibleearth.nasa.gov/
>
> USGS EROS (Earth Resources Observatory and Science (EROS) Center) (public domain): http://eros.usgs.gov/#

Natural Earth (public domain): http://www.naturalearthdata.com/

[Note: HTML markup is below. Please do not edit.]

Reviewers' comments:

Reviewer's Responses to Questions

Comments to the Author

1. Is the manuscript technically sound, and do the data support the conclusions?

The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #1: Yes

Reviewer #2: No

---

2. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #1: N/A

Reviewer #2: N/A

---

3. Have the authors made all data underlying the findings in their manuscript fully available?

The PLOS Data policy requires authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception (please refer to the Data Availability Statement in the manuscript PDF file). The data should be provided as part of the manuscript or its supporting information, or deposited to a public repository. For example, in addition to summary statistics, the data points behind means, medians and variance measures should be available. If there are restrictions on publicly sharing data—e.g. participant privacy or use of data from a third party—those must be specified.

Reviewer #1: No

Reviewer #2: Yes

---

4. Is the manuscript presented in an intelligible fashion and written in standard English?

PLOS ONE does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors here.

Reviewer #1: Yes

Reviewer #2: Yes

---

5. Review Comments to the Author

Please use the space provided to explain your answers to the questions above. You may also include additional comments for the author, including concerns about dual publication, research ethics, or publication ethics. (Please upload your review as an attachment if it exceeds 20,000 characters)

Reviewer #1: The manuscript is interesting and could be a good lesson learned about malaria (health) system development. There are some issues that should be revised and elaborated as follow:
1. In the methods section, the authors described that the study was carried out among six purposively selected key informants according to pre-determined categories, based on their knowledge and experience of using a malaria reporting information system. But there were no details about such inclusion-exclusion criteria- what it meant by knowledge and experiences. This is important especially for qualitative study to show the credential of key informants. If keeping confidentiality is the concern (but in this case, it may not be so), at least in the results section, the researchers should give certain aggregated statistics about the inclusion-exclusion criteria for the selection of key informants, for examples, %sex, age range, years of experiences working in malaria units, years of using paper-based system, position level, etc.
2. In the introduction section, the authors mentioned that the primary objective of this study was to assess the barriers in using the paper-based MRIS and the secondary purpose was to develop and implement an integrated web-based MRIS. In the methods section, the authors also described procedures to develop and test the web-based system. However, there was nothing in results section about this secondary objective. To be corresponding to the second objective of the study, the authors should describe the results, for examples, how SDLC or FAST processes were conducted to come up with the system; how the information from in-depth interview were synthesized and used as

requirements of basis for designing the system features. Last part of the Supplement S1 (Based on input from the informants in the review, a web-based version of the MRIS at the Laha…) could be the part of results section showing how the researchers summarized the system requirements from qualitative data. The authors then should subsequently add the results of the process of system developed, tested and implemented according to the second objective. This will nicely link the two objectives together.
3. Supporting information S1 should present mainly detailed processes on the system features and how to run the web-based MRIS.
4. The manuscript was a bit long, please consider cutting some repetitive contents in introduction, methods and discussion. In the discussion, the authors should discuss only about how the development and testing process and the implementing the final product regarding system/prototype. The discussion part about malaria prevention-control and elimination should be shorten or cut off as it was rather beyond the purposes of the study.
5. Minor comment – in the acknowledgements section, "I want to extend my sincere gratefulness r all co-authors for collaboration and editing skills in the finalisation of this paper...", who was "I"? so this is the manuscript of the only one author? Were not all authors taking any important roles in the study? Authorship roles should be considered.

Reviewer #2: In this paper, the authors developed a Web-based system for malaria reporting by using Joomla as a platform to overcome communication issues as stated in the introduction section. This type of work can be found in many previously published papers but there is still merit that can be considered for publication in this journal. The paper is well written and I do have several comments as follows:
1. From my perspective, manuscripts which are submitted to Plos One should address one or more research questions, so what is (are) the research questions of this paper?
2. If considered a technical paper, you should present the technical design of your system i.e. data model, system architecture…
3. How this system was evaluated by the users ? how many users had tried this system ? and their feedbacks. Since this is a Web-based system, it should be evaluated for its applicability and capability to improve the communication and reporting
4. Quite frankly, the interface is in Indonesian, so I cannot follow what are on the screenshots

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6. PLOS authors have the option to publish the peer review history of their article (what does this mean?). If published, this will include your full peer review and any attached files.

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2 attachments

Respnse to Reviewer comments.pdf
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Clean Manuscript PD edit.pdf
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Ruth Müller <ruth.mueller@med.uni-frankfurt.de> 28 November 2019 at 19:55
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

Dear Hamzah,

I will start to work on Monday on your request.

Best, Ruth

On 07.11.2019 23:42, Hamzah Hasyim wrote:

> Dear Dr Ruth,
>
> I am pleased to inform you that the academic editor and reviewer(s) of PLOS One had reviewed our paper, kindly see the message below.
>
> The supporting document S2, in-depth Interviewing Guidance will be added. When submitting the script, this file is not included. At the moment, I had made a draft rebuttal letter as a response to each point raised by the academic editor and reviewers). Please, find attached.
>
> Meanwhile, I try to complete rebuttal letter and the identity each of the key informant. Please provide any additional comments.
>
> I hope by your guidance, the paper will be published in PLOS One is a peer-reviewed open access scientific journal published by the Public Library of Science (PLOS).
>
> Your contribution and feedback are much appreciated. Thank you.
>
> Sincerely yours,
>
> Hamzah
> [Quoted text hidden]
>
> ---------- Forwarded message ---------
> From: **Harapan Harapan, MD** <harapan@unsyiah.ac.id>
> Date: Thu, 7 Nov 2019 at 23:16
> Subject: Re: PLOS ONE Decision: Revision required [PONE-D-19-28423] - [EMID:d47abfa3c2131a98]
> To: Hamzah Hasyim <hamzah.hasyim@gmail.com>, Firdaus <firdaus@unsri.ac.id>, Dr Artha Prabawa <artha@ui.ac.id>, Prof. Dr. med. D. Groneberg <groneberg@med.uni-frankfurt.de>, Dr. Ulrich Kuch <kuch@med.uni-frankfurt.de>, Dr. Ruth Müller <Ruth.Mueller@med.uni-frankfurt.de>, Ruth Müller <rmuller@itg.be>
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Harapan

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

PLOS ONE Decision: Revision required [PONE-D-19-28423] - [EMID:d47abfa3c2131a98].

1 message

Hamzah Hasyim <hamzah.hasyim@gmail.com> 18 November 2019 at 11:17
To: "Dr. Ulrich Kuch" <kuch@med.uni-frankfurt.de>, "Dr. Ulrich Kuch" <thananomics@t-online.de>
Cc: "Prof. Dr. rer. nat. Ruth Müller" <ruth.mueller@med.uni-frankfurt.de>, "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>

Dear Dr Ulrich,

I hope you are doing well.

I got a notification by the automatic reply that email of Dr Ruth is not active yet. Would you please give great additional feedback to improve our script. Kindly see track change the paper that had been discussed and revised from others co-authors.

Hopefully, by your helpful contribution, the script will be published into Plos One.

Sincerely,

Hamzah

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From: **PLOS ONE** <em@editorialmanager.com>
Date: Thu, 7 Nov 2019 at 00:28
Subject: PLOS ONE Decision: Revision required [PONE-D-19-28423] - [EMID:d47abfa3c2131a98]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

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PLOS ONE

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If you would like to make changes to your financial disclosure, please include your updated statement in your cover letter.

To enhance the reproducibility of your results, we recommend that if applicable you deposit your laboratory protocols in protocols.io, where a protocol can be assigned its own identifier (DOI) such that it can be cited independently in the future. For instructions see: http://journals.plos.org/plosone/s/submission-guidelines#loc-laboratory-protocols

Please include the following items when submitting your revised manuscript:

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Please note while forming your response, if your article is accepted, you may have the opportunity to make the peer review history publicly available. The record will include editor decision letters (with reviews) and your responses to reviewer comments. If eligible, we will contact you to opt in or out.

We look forward to receiving your revised manuscript.

Kind regards,

Luzia Helena Carvalho, Ph.D.
Academic Editor
PLOS ONE

Journal Requirements:

1. When submitting your revision, we need you to address these additional requirements. Please ensure that your manuscript meets PLOS ONE's style requirements, including those for file naming. The PLOS ONE style templates can be found at http://www.journals.plos.org/plosone/s/file?id=wjVg/PLOSOne_formatting_sample_main_body.pdf and http://www.journals.plos.org/plosone/s/file?id=ba62/PLOSOne_formatting_sample_title_authors_affiliations.pdf

2. Please include additional information regarding the survey or interview guide used in the study and ensure that you have provided sufficient details that others could replicate the analyses. For instance, if you developed a guide as part of this study and it is not under a copyright more restrictive than CC-BY, please include a copy, in both the original language and English, as Supporting Information.

3. We note that Figure 1 in your submission contain [map/satellite] images which may be copyrighted. All PLOS content is published under the Creative Commons Attribution License (CC BY 4.0), which means that the manuscript, images, and Supporting Information files will be freely available online, and any third party is permitted to access, download, copy, distribute, and use these materials in any way, even commercially, with proper attribution. For these reasons, we cannot publish previously copyrighted maps or satellite images created using proprietary data, such as Google software (Google Maps, Street View, and Earth). For more information, see our copyright guidelines: http://journals.plos.org/plosone/s/licenses-and-copyright.

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> The following resources for replacing copyrighted map figures may be helpful:
>
> USGS National Map Viewer (public domain): http://viewer.nationalmap.gov/viewer/

The Gateway to Astronaut Photography of Earth (public domain): http://eol.jsc.nasa.gov/sseop/clickmap/

Maps at the CIA (public domain): https://www.cia.gov/library/publications/the-world-factbook/index.html and https://www.cia.gov/library/publications/cia-maps-publications/index.html

NASA Earth Observatory (public domain): http://earthobservatory.nasa.gov/

Landsat: http://landsat.visibleearth.nasa.gov/

USGS EROS (Earth Resources Observatory and Science (EROS) Center) (public domain): http://eros.usgs.gov/#

Natural Earth (public domain): http://www.naturalearthdata.com/

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Reviewers' comments:

Reviewer's Responses to Questions

Comments to the Author

1. Is the manuscript technically sound, and do the data support the conclusions?

The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #1: Yes

Reviewer #2: No

---

2. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #1: N/A

Reviewer #2: N/A

---

3. Have the authors made all data underlying the findings in their manuscript fully available?

The PLOS Data policy requires authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception (please refer to the Data Availability Statement in the manuscript PDF file). The data should be provided as part of the manuscript or its supporting information, or deposited to a public repository. For example, in addition to summary statistics, the data points behind means, medians and variance measures should be available. If there are restrictions on publicly sharing data—e.g. participant privacy or use of data from a third party—those must be specified.

Reviewer #1: No

Reviewer #2: Yes

4. Is the manuscript presented in an intelligible fashion and written in standard English?

PLOS ONE does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors here.

Reviewer #1: Yes

Reviewer #2: Yes

---

5. Review Comments to the Author

Please use the space provided to explain your answers to the questions above. You may also include additional comments for the author, including concerns about dual publication, research ethics, or publication ethics. (Please upload your review as an attachment if it exceeds 20,000 characters)

Reviewer #1: The manuscript is interesting and could be a good lesson learned about malaria (health) system development. There are some issues that should be revised and elaborated as follow:
1. In the methods section, the authors described that the study was carried out among six purposively selected key informants according to pre-determined categories, based on their knowledge and experience of using a malaria reporting information system. But there were no details about such inclusion-exclusion criteria- what it meant by knowledge and experiences. This is important especially for qualitative study to show the credential of key informants. If keeping confidentiality is the concern (but in this case, it may not be so), at least in the results section, the researchers should give certain aggregated statistics about the inclusion-exclusion criteria for the selection of key informants, for examples, %sex, age range, years of experiences working in malaria units, years of using paper-based system, position level, etc.
2. In the introduction section, the authors mentioned that the primary objective of this study was to assess the barriers in using the paper-based MRIS and the secondary purpose was to develop and implement an integrated web-based MRIS. In the methods section, the authors also described procedures to develop and test the web-based system. However, there was nothing in results section about this secondary objective. To be corresponding to the second objective of the study, the authors should describe the results, for examples, how SDLC or FAST processes were conducted to come up with the system; how the information from in-depth interview were synthesized and used as requirements of basis for designing the system features. Last part of the Supplement S1 (Based on input from the informants in the review, a web-based version of the MRIS at the Laha…) could be the part of results section showing how the researchers summarized the system requirements from qualitative data. The authors then should subsequently add the results of the process of system developed, tested and implemented according to the second objective. This will nicely link the two objectives together.
3. Supporting information S1 should present mainly detailed processes on the system features and how to run the web-based MRIS.
4. The manuscript was a bit long, please consider cutting some repetitive contents in introduction, methods and discussion. In the discussion, the authors should discuss only about how the development and testing process and the implementing the final product regarding system/prototype. The discussion part about malaria prevention-control and elimination should be shorten or cut off as it was rather beyond the purposes of the study.
5. Minor comment – in the acknowledgements section, ”I want to extend my sincere gratefulness r all co-authors for collaboration and editing skills in the finalisation of this paper...”, who was “I”? so this is the manuscript of the only one author? Were not all authors taking any important roles in the study? Authorship roles should be considered.

Reviewer #2: In this paper, the authors developed a Web-based system for malaria reporting by using Joomla as a platform to overcome communication issues as stated in the introduction section. This type of work can be found in many previously published papers but there is still merit that can be considered for publication in this journal. The paper is well written and I do have several comments as follows:
1. From my perspective, manuscripts which are submitted to Plos One should address one or more research questions, so what is (are) the research questions of this paper?
2. If considered a technical paper, you should present the technical design of your system i.e. data model, system

architecture…
3. How this system was evaluated by the users ? how many users had tried this system ? and their feedbacks. Since this is a Web-based system, it should be evaluated for its applicability and capability to improve the communication and reporting
4. Quite frankly, the interface is in Indonesian, so I cannot follow what are on the screenshots

---

6. PLOS authors have the option to publish the peer review history of their article (what does this mean?). If published, this will include your full peer review and any attached files.

If you choose “no”, your identity will remain anonymous but your review may still be made public.

Do you want your identity to be public for this peer review? For information about this choice, including consent withdrawal, please see our Privacy Policy.

Reviewer #1: No

Reviewer #2: Yes: Quang-Thanh Bui

[NOTE: If reviewer comments were submitted as an attachment file, they will be attached to this email and accessible via the submission site. Please log into your account, locate the manuscript record, and check for the action link "View Attachments". If this link does not appear, there are no attachment files to be viewed.]

While revising your submission, please upload your figure files to the Preflight Analysis and Conversion Engine (PACE) digital diagnostic tool, https://pacev2.apexcovantage.com/. PACE helps ensure that figures meet PLOS requirements. To use PACE, you must first register as a user. Registration is free. Then, login and navigate to the UPLOAD tab, where you will find detailed instructions on how to use the tool. If you encounter any issues or have any questions when using PACE, please email us at figures@plos.org. Please note that Supporting Information files do not need this step.

---

7 attachments

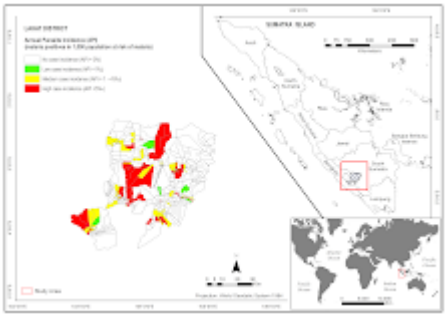

Fig 1.png
828K

Figs 2.png
103K

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121K

Response to Reviewer comments PD HH edit.docx
24K

Cover letter for „PLoS One“.docx
22K

S1 File Detailed instrument of study for in-depth interview .docx
42K

S2 File Detailed processes on how to run the web-based MRIS.docx
3648K

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

Submission Confirmation for PONE-D-19-28423R1 - [EMID:7df4df9377fb04d8]

3 messages

PLOS ONE <em@editorialmanager.com> 22 December 2019 at 03:23
Reply-To: PLOS ONE <plosone@plos.org>
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423R1
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

Dear Dr. rer. med. Hasyim,

PLOS ONE has received your revised submission.

You may check the status of your manuscript by logging onto Editorial Manager at (https://www.editorialmanager.com/pone/).

Kind regards,

PLoS ONE

_____
In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: https://www.editorialmanager.com/pone/login.asp?a=r). Please contact the publication office if you have any questions.

Hamzah Hasyim <hamzah.hasyim@gmail.com> 22 December 2019 at 03:37
To: "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>

Dear Dr Ruth,

Thank you very much for your permission. The final PDF has approved. Kindly see as an attached.

Wishing you a safe journey. My warmest wishes for a happy holiday season!

Sincerely yours,

Hamzah

---------- Forwarded message ---------
From: **Ruth Müller** <rmuller@itg.be>
Date: Sun, 22 Dec 2019 at 00:00
Subject: Re: Fwd: PLOS ONE Notification: Your PDF has been built (PONE-D-19-28423R1) - [EMID:c5b2543844ccce0d]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

Dear Hamzah,

yes, please proceed. I am on travel and cannot follow final changes.

Best, Ruth

---------- Forwarded message ---------
From: **PLOS ONE** <em@editorialmanager.com>
Date: Sun, 22 Dec 2019 at 03:22

Subject: Submission Confirmation for PONE-D-19-28423R1 - [EMID:7df4df9377fb04d8]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423R1
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

Dear Hasyim,
[Quoted text hidden]

2 attachments

Author's Decision.JPG
25K

PONE-D-19-28423_R1.pdf
2823K

Hamzah Hasyim <hamzah.hasyim@gmail.com> 22 December 2019 at 03:56
To: PLOS ONE <plosone@plos.org>

Dear **PLoS ONE,**

I am pleased to inform you that the final PDF : PONE-D-19-28423R1 has approved. Kindly see as an attached.

However, I have a bit confused to synchronize my name between in "the corresponding author" written as Hamzah Hasyim, Dr. rer. med. In another hand, "in the order of authors" written as Hamzah Hasyim, PhD candidate.

I want to ask you how to set the title degree in my name to make it same automatically?

Fyi, the last degree that I got from the institute as Dr. rer. med. Hamzah Hasyim, like the temporary certificate that I got as an attached

My warmest wishes for a happy holiday season!

Sincerely yours,

Hamzah

[Quoted text hidden]

2 attachments

PONE-D-19-28423_R1.pdf
1544K

Dr. rer. med. Hamzah Hasyim.pdf
213K

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423R2: Final Decision Being Processed - [EMID:4e55cb2638dd5b5d]

5 messages

PLOS ONE <em@editorialmanager.com> 18 February 2020 at 19:30
Reply-To: PLOS ONE <plosone@plos.org>
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

CC: "Firdaus Firdaus" firdaus@unsri.ac.id, "Artha Prabawa" artha@ui.ac.id, "Pat Dale" p.dale@griffith.edu.au, "Harapan Harapan" harapan@unsyiah.ac.id, "David A. Groneberg" groneberg@med.uni-frankfurt.de, "Ulrich Kuch" kuch@med.uni-frankfurt.de, "Ruth Müller" rmuller@itg.be

Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.
PONE-D-19-28423R2

Dear Dr. Hasyim,

We are pleased to inform you that your manuscript has been judged scientifically suitable for publication and will be formally accepted for publication once it complies with all outstanding technical requirements.

Within one week, you will receive an e-mail containing information on the amendments required prior to publication. When all required modifications have been addressed, you will receive a formal acceptance letter and your manuscript will proceed to our production department and be scheduled for publication.

Shortly after the formal acceptance letter is sent, an invoice for payment will follow. To ensure an efficient production and billing process, please log into Editorial Manager at https://www.editorialmanager.com/pone/, click the "Update My Information" link at the top of the page, and update your user information. If you have any billing related questions, please contact our Author Billing department directly at authorbilling@plos.org.

If your institution or institutions have a press office, please notify them about your upcoming paper to enable them to help maximize its impact. If they will be preparing press materials for this manuscript, you must inform our press team as soon as possible and no later than 48 hours after receiving the formal acceptance. Your manuscript will remain under strict press embargo until 2 pm Eastern Time on the date of publication. For more information, please contact onepress@plos.org.

With kind regards,

Luzia Helena Carvalho, Ph.D.
Academic Editor
PLOS ONE

Additional Editor Comments (optional):

Reviewers' comments:

Hamzah Hasyim <hamzah.hasyim@gmail.com> 19 February 2020 at 20:42

To: "Prof. Dr. rer. nat. Ruth Müller" <ruth.mueller@med.uni-frankfurt.de>, "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>

Dear Prof Ruth,

I am delighted to inform you that our manuscript will be formally accepted for publication at PlosOne once it complies with all outstanding technical requirements.

Kindly see a message below. Please advise

Sincerely,

Hamzah

[Quoted text hidden]

Hamzah Hasyim <hamzah.hasyim@gmail.com> 19 February 2020 at 20:43
To: Professor Pat Dale <p.dale@griffith.edu.au>

Dear Prof Pat,

I am delighted to inform you that our manuscript will be formally accepted for publication at Plos One once it complies with all outstanding technical requirements.

Kindly see a message below. Please advise

Sincerely,

Hamzah
---------- Forwarded message ---------
From: **PLOS ONE** <em@editorialmanager.com>
Date: Tue, 18 Feb 2020 at 19:29
Subject: PONE-D-19-28423R2: Final Decision Being Processed - [EMID:4e55cb2638dd5b5d]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

[Quoted text hidden]

Ruth Müller <rmuller@itg.be> 19 February 2020 at 21:20
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>, "Prof. Dr. rer. nat. Ruth Müller" <ruth.mueller@med.uni-frankfurt.de>

Dear Dr. Hamzah,

my congratulations!

I hope you recovered from the PhD study and doing well.

Please send me the final pdf when it will be available.

All the best,

Ruth

[Quoted text hidden]

Hamzah Hasyim <hamzah.hasyim@gmail.com> 19 February 2020 at 21:42
To: "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>
Cc: "Prof. Dr. rer. nat. Ruth Müller" <ruth.mueller@med.uni-frankfurt.de>

Dear Prof Ruth,

Kindly see the latest manuscript that I have submitted to Plos One Journal.

After this paper published, as I said previously, I could publish an article at credible journals again, under your guidance. Three studies, as part of my dissertation, so my target for five papers can be fulfilled.

Currently, I was teaching and researching at my University. Thank you very much for your assistance while I was pursuing my PhD at the institute.

Sincerely,

Hamzah
[Quoted text hidden]

PONE-D-19-28423_R2.pdf
2662K

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

Required Modifications for PONE-D-19-28423R2 - [EMID:c6ae3449b4664169]

4 messages

PLOS ONE <em@editorialmanager.com> 19 February 2020 at 22:51
Reply-To: PLOS ONE <plosone@plos.org>
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423R2
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

Dear Dr. Hasyim:

Thank you for submitting your work to PLOS ONE. Your manuscript will be formally accepted and enter production after you complete the requests below. Please note that you will not be able to make changes to your manuscript once it enters the production process. PLOS ONE does NOT provide author proofs. Any changes other than those requested in this email will need to be reviewed by the Academic Editor and reviewers; this will delay the formal acceptance of your manuscript.

To access your manuscript and complete these changes, please follow this link: https://www.editorialmanager.com/pone/l.asp?i=37666889&l=IGR6GMX6.

Please note that this link should not be shared with other people to ensure that any action taken on this submission is done by you, the Corresponding Author.

You will find the submission in "Current Task Assignments." From there you must download your submission files via the "Assignment Files" link. You can also download the manuscript file attached to this email; the document has been formatted to track all changes, and we will only accept this version with locked tracked changes returned to us.

To opt in or out of publishing your peer review history, please answer the Peer Review History question within this task. Please note we are unable to send your article to production without this.

Once you have made all the required changes, click "Submit Task" to upload the corrected files.

Your task is due Feb 22 2020 11:59PM.

Please contact plosone@plos.org with any questions or concerns. For billing related questions, please contact our Author Billing department directly at authorbilling@plos.org. For questions regarding your press release or the press process, please contact onepress@plos.org

With kind regards,
PLOS ONE staff

JOURNAL REQUIREMENTS:

1. Please ensure that the author list and affiliations are correct on the title page of your manuscript, and that your author contributions, competing interests, and financial disclosure are correct as listed below. All of these sections will be indexed in PubMed and published by PLOS ONE as you have written them. Please email plosone@plos.org if any changes to this content need to be made.

Hamzah Hasyim
Conceptualization
Data curation
Formal analysis
Investigation
Methodology
Project administration
Resources
Validation
Writing – original draft

Firdaus Firdaus
Conceptualization
Data curation
Formal analysis
Investigation
Methodology
Project administration
Software
Visualization

Artha Prabawa
Conceptualization
Formal analysis
Methodology
Validation
Writing – original draft
Writing – review & editing

Pat Dale
Conceptualization
Formal analysis
Resources
Supervision
Visualization
Writing – original draft
Writing – review & editing

Harapan Harapan
Conceptualization
Funding acquisition
Methodology
Validation
Visualization
Writing – original draft
Writing – review & editing

David A. Groneberg

Conceptualization
Formal analysis
Funding acquisition
Methodology
Supervision
Writing – original draft
Writing – review & editing

Ulrich Kuch
Conceptualization
Data curation
Funding acquisition
Methodology
Project administration
Supervision
Validation
Visualization
Writing – original draft
Writing – review & editing

Ruth Müller
Conceptualization
Formal analysis
Funding acquisition
Methodology
Supervision
Validation
Visualization
Writing – original draft
Writing – review & editing

Please see here for the full list and definition of contributor roles: http://journals.plos.org/plosone/s/authorship#loc-author-contributions

Competing Interests: The authors have declared that no competing interests exist.

Financial Disclosure: The author(s) received no specific funding for this work.

2. Your manuscript currently meets the production requirements and does not require further revision. However, please review your manuscript for grammatical or typographical errors as this is the last opportunity to do so prior to publication.

_____
In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: https://www.editorialmanager.com/pone/login.asp?a=r). Please contact the publication office if you have any questions.

PONE-D-19-28423R2_ftc.docx
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Hamzah Hasyim <hamzah.hasyim@gmail.com> 20 February 2020 at 05:57
To: "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>
Cc: "Prof. Dr. rer. nat. Ruth Müller" <ruth.mueller@med.uni-frankfurt.de>

Dear Prof Ruth,

Kindly see the current letter from PlosOne. Please advise.

If we have completed the process, I will click "Submit Production Task" So ***PLOS ONE***'s ***Editor***-in-Chief will review the script changes which we have made. The task is due Feb 22 2020 11:59 PM.

Sincerely,

Hamzah

---------- Forwarded message ---------
From: **PLOS ONE** <em@editorialmanager.com>
Date: Wed, 19 Feb 2020 at 22:50
Subject: Required Modifications for PONE-D-19-28423R2 - [EMID:c6ae3449b4664169]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423R2
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

Dear Dr. Hasyim:

Thank you for submitting your work to PLOS ONE. Your manuscript will be formally accepted and enter production after you complete the requests below. Please note that you will not be able to make changes to your manuscript once it enters the production process. PLOS ONE does NOT provide author proofs. Any changes other than those requested in this email will need to be reviewed by the Academic Editor and reviewers; this will delay the formal acceptance of your manuscript.

To access your manuscript and complete these changes, please follow this link: ********.
[Quoted text hidden]

3 attachments

PlosOne.PNG
47K

PlosOne1.PNG
53K

PONE-D-19-28423.zip
70K

Hamzah Hasyim <hamzah.hasyim@gmail.com>
To: Professor Pat Dale <p.dale@griffith.edu.au>

Dear Prof Pat

Regarding the final process as below at https://www.editorialmanager.com/pone/Default.aspx, before I "Submit Production Task" please advise.
So, I can completed the process.

PLOS gives me the option to publish the peer review history of the article, please read more at https://journals.plos.org/plosone/s/editorial-and-peer-review-process#loc-peer-review-history
PM

Sincerely,

Hamzah

Newly Uploaded Files

No files have been uploaded as part of task submission

Submit Production Task for Manuscript Number: PONE-D-19-28423R2, DOI: 10.1371/journal.pone.02
Hamzah Hasyim (INDONESIA): "Potential for a web-based management information system to improve malar
exploratory study in the Lahat District, South Sumatra Province, Indonesia."

To access the current files associated with your submission, please go to 'Assignment Files'.

Once you have addressed the requests outlined in the Assignment Letter, please click "Submit Task". This will open a new window where you can upload your corrected file(s), including the tracked-changes version of your manuscript file.

You can confirm any necessary details, including funding, competing interests, and data availability, by inserting comments in the email template generated at the bottom of the window - please add your comments in the 'Letter Body' box below.

To opt in or out of publishing the peer review history of this article, please answer the *Peer Review History* question. Please note that we are unable to send your article to production without your response.

Click "Submit Production Task" once you have completed the process, and we will review the changes you have made. We will notify you of any additional requests, if required, before passing your submission through to production.

Production Task: Final Author Requirements (Peer Review History)
Due Date: Feb 22 2020 11:59PM

Cancel | Upload Files | Submit Production Task

***We cannot publish your article without a response to the following question.**

PLOS gives you the option to publish the peer review history of your article (read more). This includes the following text and attachments:

1. The editorial decision letters for all revisions
2. The editorial acceptance letter
3. Your responses to reviewer comments

Do you want to publish the peer review history?

- ○ Yes - On behalf of myself and my co-authors, I give PLOS consent to publish all peer review materials associated with my article.
- ○ No - I do not want to publish the peer review history.

Letter Subject: Final Author Requirements are complete for %MS_NUMBER% / %DOI%

cc: bcc:

✔ plosone@plos.org

Letter Body: Insert Special Character | Open in New Window

Original Assignment Files

Item	Description	File Name	Last Modified	Date Last Downloaded	Action
Manuscript with Locked Track Changes	MS for AU with locked tracked changes	PONE-D-19-28423R2_ftc.docx	Feb 19 2020 10:50AM	Feb 21 2020 04:31AM	Download

Newly Uploaded Files

No files have been uploaded as part of task submission

---------- Forwarded message ---------
From: **PLOS ONE** <em@editorialmanager.com>
Date: Wed, 19 Feb 2020 at 22:50
Subject: Required Modifications for PONE-D-19-28423R2 - [EMID:c6ae3449b4664169]
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

PONE-D-19-28423R2
Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

Dear Dr. Hasyim:

Thank you for submitting your work to PLOS ONE. Your manuscript will be formally accepted and enter production after you complete the requests below. Please note that you will not b manuscript once it enters the production process. PLOS ONE does NOT provide author proofs. Any changes other than those requested in this email will need to be reviewed by the Acade will delay the formal acceptance of your manuscript.

To access your manuscript and complete these changes, please follow this link: **********
[Quoted text hidden]
[Quoted text hidden]

PONE-D-19-28423R2_ftc.docx
74K

Patricia Dale <p.dale@griffith.edu.au> 21 February 2020 at 21:54
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

Dear Hamzah
It is your choice if you wish to allow publication of the peer review history. I don't think it is very interesting or useful to do that in this case but if you want to I have no objections. You might check with other authors.
All best
Pat

Emeritus Professor Pat Dale
School of Environment and Science,
Environmental Futures Research Institute,
Griffith University,
Nathan,
Queensland, Australia 4111
Email: p.dale@griffith.edu.au

From: Hamzah Hasyim <hamzah.hasyim@gmail.com>
Sent: Friday, 21 February 2020 7:57 PM
To: Patricia Dale <p.dale@griffith.edu.au>
Subject: Fwd: Required Modifications for PONE-D-19-28423R2 - [EMID:c6ae3449b4664169]

[Quoted text hidden]

Gmail Hamzah Hasyim <hamzah.hasyim@gmail.com>

Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia

3 messages

Ruth Müller <rmuller@itg.be> 23 May 2020 at 19:02
To: "hamzah.hasyim@gmail.com'" <hamzah.hasyim@gmail.com>

Dear Hamzah,

I hope you are fine.

Did you already receive the final pdf of the publication:

Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia

Could you send me this / the full citation, please?

Thanks in advance!

Best, Ruth

Hamzah Hasyim <hamzah.hasyim@gmail.com> 24 May 2020 at 05:58
To: "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>

Dear Prof Ruth,

It is a pleasure to be in touch with you again. I hope all is well.

Thank you dor your message. Our paper is still processed for publication due to I should give bit manuscript clarification previously, and there is also a bit misunderstanding concerning Data Availability Statement in PLOS ONE side that I have clarified.

However, I hope the last clarification is Okay already, and our article will be published soon. Kindly see the message below.

Further, May I know is the paper paid already by Frau Volante?

Stay at home and stay safe.

Best regards,

Hamzah

Submissions with Production Completed

Contents: This page lists all submissions where production has been completed.

Page: 1 of 1 (1 total submissions) Display 10 results per page.

Action	Manuscript Number	DOI	Article Title	Initial Date Submitted	Final Decision Date
Action Links	PONE-D-19-28423R2	10.1371/journal.pone.0229838	Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.	Oct 11 2019 5:54AM	Feb 14 2020 11:32AM

Page: 1 of 1 (1 total submissions) Display 10 results per page.

<< Author Main Menu

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---------- Forwarded message ---------
From: **Hamzah Hasyim** <hamzah.hasyim@gmail.com>
Date: Fri, 22 May 2020 at 08:13
Subject: Re: Manuscript Clarification Request - pone.0229838
To: PLOS ONE <plosone@plos.org>

Dear Emma
Senior Publications Assistant, PLOS ONE

Thank you for your helpful feedback. I agree with your recommendation concerning the following updated Data Availability Statement:

"The primary information concerning the paper-based and web-based information system malaria is included in the paper and its Supporting Information files. Additional data are available at the Lahat District Health Office, Indonesia and can be requested from [Mr. Jerri Agustan, and jerriagustan81@gmail.com from the Lahat District Health Office, Indonesia]."

FYI, Mr Jerri Agustan, BSc.PH, who has the main task in the accreditation and licensing section in the field of Health Services, and he also has additional functions as a website manager admin at the Lahat District Health Office, Indonesia.

I hope this will meet your hopefulness and will accelerate the publication process. I look forward to hearing from you.

Hamzah
On behalf of the Author,

On Fri, 22 May 2020 at 04:56, plosone <plosone@plos.org> wrote:

> Dear Hamzah,
>
> Thank you very much for the clarification regarding the site http://dinkes.lahatkab.go.id/ and please accept my apologies for my misunderstanding. With the information provided and to ensure your future readers are able to request the additional data, we recommend the following updated Data Availability Statement:
>
> "The primary information concerning the paper-based and web-based information system malaria is included in the paper and its Supporting Information files. Additional data are available at the Lahat District Health Office, Indonesia and can be requested from **[insert non-author contact and email from the the Lahat District Health Office, Indonesia].**"
>
> If the above statement is accurate, I kindly ask that you provide the contact information for a non-author contact where indicated in the statement and I'll pass along the finalized Data Availability Statement to our production team as soon as possible.
>
> Thank you again for your time and consideration on this matter and please let me know if you have any further questions.

Kind regards,
Emma

Emma Stillings
Senior Publications Assistant, PLOS ONE
plosone@plos.org

PLOS | Empowering researchers to transform science
1160 Battery Street, Suite 225, San Francisco, CA 94111 I PLOS ONE

Case Number: 06614649
ref:_00DU0Ifis._5004P19ZQe2:ref

---------- Original Message ----------
From: Hamzah Hasyim [hamzah.hasyim@gmail.com]
Sent: 5/21/2020 3:21 AM
To: plosone@plos.org
Subject: Re: Manuscript Clarification Request - pone.0229838

Dear Emma
Senior Publications Assistant, PLOS ONE

Thank you for your feedback, May I little bit revise the data availability statement below

"The primary information concerning the paper-based and web-based information system malaria is included in the paper and its Supporting Information files. Additional data are available at the Lahat District Health Office, Indonesia."

Address of the Lahat District Health Office is Dinas Kesehatan Kab. Lahat
Kantor pemda di Lahat, Sumatera Selatan. Jalan Bhayangkara, Bandar Jaya, Kec. Lahat, Kabupaten Lahat, Sumatera Selatan 31412, Indonesia.
I have just asked my colleague who have an additional task as website manager as admin in Lahat District Health Office concerning the available information at the site http://dinkes.lahatkab.go.id/. He tells me that the site is still not accessed yet due to financing of the site that handled by Communication and Information Office (Diskominfo) all this time, with hosting by Diskominfo. Regional Apparatus Organization or in Indonesia Language "Organisasi Perangkat Daerah" (OPD) get the subdomain of the site. Since 2020 financing policy of the site is stopped, and Diskominfo suggests to OPD in the district to developed, updated, and self-financing the site. So, we don't know when the process will be completed to reaccess http://dinkes.lahatkab.go.id/.

I hope this will meet your expectations and will expedite the publication process. I look forward to hearing from you.

Hamzah
On behalf of the Author,

On Wed, 20 May 2020 at 03:25, plosone <plosone@plos.org> wrote:

> Dear Hamzah,
>
> Thank you very much for providing further clarification regarding your Data Availability Statement. With the information provided, we recommend the following Data Availability Statement:
>
> "The primary information concerning the paper-based and web-based information system malaria is included in the paper and its Supporting Information files. Additional data are available at http://dinkes.lahatkab.go.id."
>
> If the above statement accurately reflects where the minimal underlying dataset is located, please confirm and we will update your statement on your behalf. The minimal underlying dataset is defined as all data needed to replicate all of the figures, graphs, tables, statistics, and other values within your submission.
>
> Thank you in advance for your time and consideration on this matter, and please don't hesitate to let me know if you have any further questions or concerns.
>
> Kind regards,
> Emma
>
> Emma Stillings
> Senior Publications Assistant, PLOS ONE
> plosone@plos.org
>
> PLOS | Empowering researchers to transform science
> 1160 Battery Street, Suite 225, San Francisco, CA 94111 I PLOS ONE
>
> Case Number: 06614649
> ref:_00DU0Ifis._5004P19ZQe2:ref
>
> ---------- Original Message ----------

From: Hamzah Hasyim [hamzah.hasyim@gmail.com]
Sent: 5/16/2020 7:15 PM
To: plosone@plos.org
Cc: production@plos.kwfco.com
Subject: Re: Manuscript Clarification Request - pone.0229838

Dear Emma
Senior Publications Assistant, PLOS ONE

Please note that the primary information concerning the paper-based and web-based information system malaria is included in the paper.

So, may we revised the article's Data Availability Statement that the data available at http://dinkes.lahatkab.go.id previously? I change it that the paper-based and web-based information system malaria is included in the article.

Best,

Hamzah

On Sat, 16 May 2020 at 05:31, plosone <plosone@plos.org> wrote:

> Dear Dr. Hasyim,
>
> Thank you for your message and please accept my sincere apologies for my delayed reply. Unfortunately, each recommended repository is different and has different instructions for depositing the data. Once you have determined which repository is the best fit for your data, I would highly recommend contacting that repository directly for any additional details on the deposit process. After you have deposited the data, you should receive a permanent DOI (Digital Object Identifier). I kindly ask that you provide the assigned DOI via reply email so that I may update your Data Availability Statement with the updated information.
>
> I sincerely apologize I am unable to provide more detailed instructions, but please let me know if you have any futher questions or concerns regarding your PLOS ONE manuscript and I'd be happy to assist.
>
> Kind regards,
> Emma
>
> Emma Stillings
> Senior Publications Assistant, PLOS ONE
> plosone@plos.org
>
> PLOS | Empowering researchers to transform science
> 1160 Battery Street, Suite 225, San Francisco, CA 94111 I PLOS ONE
>
> Case Number: 06614649
> ref:_00DU0Ifis._5004P19ZQe2:ref
>
> ---------- Original Message ----------
> **From:** Hamzah Hasyim [hamzah.hasyim@gmail.com]
> **Sent:** 4/30/2020 8:38 PM
> **To:** plosone@plos.org
> **Subject:** Re: Fw: Manuscript Clarification Request - pone.0229838
>
> Dear Emma,
> Publications Assistant, PLOS ONE
>
> Thank you very much for your assistance.
>
> Kindly see the data "Report of malaria at Lahat District Health Office (Indonesia)" as attached. This paper uses the source secondary aggregate data form routine reporting of malaria at Lahat District Health Office, South Sumatra Province, Indonesia.
>
> Would you please assist me in how to deposit the data set in repositories on the website https://journals.plos.org/plosone/s/recommended-repositories.
>
> I hope this will meet your expectations, and I look forward to hearing from you.
>
> Respectfully,
>
> Hamzah Hasyim,
>
> On Wed, 29 Apr 2020 at 06:35, plosone <plosone@plos.org> wrote:
>
> > Dear Dr. Hasyim,

Thank you very much for copying your message from 15 April 2020 below. I have taken this case over from my colleague Laura and would be happy to assist.

Unfortunately, PLOS ONE policy does not allow for authors to be the sole point of contact for data requests. If the current repository for the data is under maintenance for an unknown amount of time, would it be possible to provide the anonymized data in a different repository? We have a list of recommended repositories on our website, here: https://journals.plos.org/plosone/s/recommended-repositories.

Thank you again for your time and assistance on this matter, and please don't hesitate to let me know if you have any further questions or concerns. I'm always happy to assist.

Kind regards,
Emma

Emma Stillings
Publications Assistant, PLOS ONE
plosone@plos.org

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Case Number: 06614649
ref:_00DU0Ifis._5004P19ZQe2:ref

---------- Original Message ----------
From: Hamzah Hasyim [hamzah.hasyim@gmail.com]
Sent: 4/21/2020 7:12 PM
To: plosone@plos.org; production@plos.kwfco.com
Cc: p.dale@griffith.edu.au; artha@ui.ac.id; firdaus@unsri.ac.id
Subject: Re: Fw: Manuscript Clarification Request - pone.0229838

Dear Laura,

I sent a reply on April 15.

If you have not received it I am copying it below.

Please confirm you have received it.

Regards,

Hamzah Hasyim,

---------- Forwarded message ---------
From: **Hamzah Hasyim** <hamzah.hasyim@gmail.com>
Date: Wed, 15 Apr 2020 at 19:13
Subject: Re: Manuscript Clarification Request - pone.0229838
To: PLOS Production <production@plos.kwfco.com>
Cc: PLOS ONE <plosone@plos.org>

Dear Laura,

I hope you are in great health.

Re: data availability for:

“Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.”

The data is not currently available online (as noted in previous emails). The website of http://dinkes.lahatkab.go.id/ of district health office Lahat under maintenance up to present.

The solution may be for anyone wishing to access the data to contact me directly, and I will provide an anonymised copy of the data.

I hope this is satisfactory and will expedite the publication process.

Best regards,

Hamzah Hasyim,
On behalf of Author,

On Tue, 21 Apr 2020 at 18:33, PLOS Production <production@plos.kwfco.com> wrote:

Dear Dr. Hasyim,

The following message was originally sent to you on March 5, 2020 but we never heard back on how to proceed. Please review and let us know. Thanks.

Dear Dr. Hasyim,

I would like to clarify a minor issue in your PLOS ONE article "Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia."

It appears that the following link in your article's Data Availability Statement does not appear to be working: http://dinkes.lahatkab.go.id/. Can you please provide us with a replacement of verify that the aforementioned will be functioning at the time of your paper's publication?

Please let me know if you have any questions or concerns. Your response to this request will help ensure the timely publication of your article.

From: PLOS Production
Sent: Thursday, March 5, 2020 3:00 PM
To: hamzah.hasyim@gmail.com <hamzah.hasyim@gmail.com>
Subject: Manuscript Clarification Request - pone.0229838

Dear Dr. Hasyim,

I would like to clarify a minor issue in your PLOS ONE article "Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia."

It appears that the following link in your article's Data Availability Statement does not appear to be working: http://dinkes.lahatkab.go.id/. Can you please provide us with a replacement of verify that the aforementioned will be functioning at the time of your paper's publication?

Please let me know if you have any questions or concerns. Your response to this request will help ensure the timely publication of your article.

Regards,

Laura

Laura Hermoza
KWF Staff Production Specialist

On behalf of
PLOS ONE
plosone@plos.org

Ruth Müller <rmuller@itg.be> 24 May 2020 at 06:34
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

Dear Hamzah,

thanks for clarification!

Please contact Frau Volante.

Stay healthy!

Best, Ruth

[Quoted text hidden]

Author's Response To Reviewer Comments

Close

Response letter to the review of PONE-D-19-28423R1, Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia. PLOS ONE

Dear
Luzia Helena Carvalho, Ph.D.
Academic Editor
PLOS ONE

Please find below our response to reviewer 2.

Sincerely,

Hamzah Hasyim (on behalf of all authors)

Reviewer's Responses to Questions

Reviewer #1: (No Response)

Reviewer #2: The authors have addressed all concerns by the reviewers, and I would recommend publication in this current form. If it is possible, the authors should include the current status of the Web-based system (since surveys were implemented in 2012) and the benefit it brings

Response:

Thank you for your very helpful feedback. The open-source programming language was first released in 2005 and has seen upgrades since then, but remains a free, open source system that can be used for a MRIS. It will remain up-to-date because it is an innovative ICT system, continuously being developed by communication practitioners and academics in various fields. In our future research we plan to extend the study for the optimization of malaria surveillance information systems through the application of the android mobile geospatial information system (GIS) in endemic area Lahat District, South Sumatra Province in 2020.

Close

Date:	Feb 18 2020 07:30AM
To:	"Hamzah Hasyim" hamzah.hasyim@gmail.com
cc:	"Firdaus Firdaus" firdaus@unsri.ac.id, "Artha Prabawa" artha@ui.ac.id, "Pat Dale" p.dale@griffith.edu.au, "Harapan Harapan" harapan@unsyiah.ac.id, "David A. Groneberg" groneberg@med.uni-frankfurt.de, "Ulrich Kuch" kuch@med.uni-frankfurt.de, "Ruth Müller" rmuller@itg.be
From:	"PLOS ONE" plosone@plos.org
Subject:	PONE-D-19-28423R2: Final Decision Being Processed

Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.
PONE-D-19-28423R2

Dear Dr. Hasyim,

We are pleased to inform you that your manuscript has been judged scientifically suitable for publication and will be formally accepted for publication once it complies with all outstanding technical requirements.

Within one week, you will receive an e-mail containing information on the amendments required prior to publication. When all required modifications have been addressed, you will receive a formal acceptance letter and your manuscript will proceed to our production department and be scheduled for publication.

Shortly after the formal acceptance letter is sent, an invoice for payment will follow. To ensure an efficient production and billing process, please log into Editorial Manager at https://www.editorialmanager.com/pone/, click the "Update My Information" link at the top of the page, and update your user information. If you have any billing related questions, please contact our Author Billing department directly at authorbilling@plos.org.

If your institution or institutions have a press office, please notify them about your upcoming paper to enable them to help maximize its impact. If they will be preparing press materials for this manuscript, you must inform our press team as soon as possible and no later than 48 hours after receiving the formal acceptance. Your manuscript will remain under strict press embargo until 2 pm Eastern Time on the date of publication. For more information, please contact onepress@plos.org.

With kind regards,

Luzia Helena Carvalho, Ph.D.
Academic Editor
PLOS ONE

Additional Editor Comments (optional):

Reviewers' comments:

Gmail

Hamzah Hasyim <hamzah.hasyim@gmail.com>

Your article is published in PLOS ONE - Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia.

12 messages

No Reply <noreply@plos.org> 10 June 2020 at 15:20
To: "hamzah.hasyim@gmail.com" <hamzah.hasyim@gmail.com>

PLOS ONE

Dear Hamzah Hasyim,

I'm excited to share that your article, Potential for a web-based management information system to improve malaria control: An exploratory study in the Lahat District, South Sumatra Province, Indonesia., is now published in *PLOS ONE*. Let me be the first to congratulate you! Your article is now freely available for anyone around the world to read, cite and reuse under an Open Access license.

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Joerg Heber, Editor-in-Chief, *PLOS ONE*
ORCID: 0000-0002-6370-4254

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San Francisco, CA 94111
US

Hamzah Hasyim <hamzah.hasyim@gmail.com> 10 June 2020 at 17:59
To: "Professor Dr. Dr. h.c. mult. David A. Groneberg" <groneberg@med.uni-frankfurt.de>, "Prof. Dr. rer. nat. Ruth Müller" <ruth.mueller@med.uni-frankfurt.de>, "Dr. Ulrich Kuch" <kuch@med.uni-frankfurt.de>
Cc: "Prof. Dr. rer. nat. Ruth Müller" <rmuller@itg.be>, "Dr. Ulrich Kuch" <thananomics@t-online.de>, sehr geehrte Frau Volante <volante@em.uni-frankfurt.de>

Dear
Professor Dr David Groneberg MD PhD,
Professor Dr. rer. nat. Ruth Müller,

Dr. Ulrich Kuch.

I am delighted to inform you that our article has published in Plos One. The link of the article is https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0229838.

The journal have higher citation index or h index is 268 that information available at https://www.scimagojr.com/journalsearch.php?q=10600153309&tip=sid&clean=0.

Again thank you for your great support. I hope we can continue the next collaboration publication in high impact factor journal through the support of our Institute.

Fyi, I have one paper anymore that correlated with my thesis previously that made in the Institute.

Please stay safe and healthy!

--
Respectfully,

Hamzah Hasyim

Lecturer in Faculty of Public Health, Sriwijaya University,
South Sumatra, alembang-Prabumulih, KM 32
Indralaya (Ogan Ilir) 30662
INDONESIA
http://fkm.unsri.ac.id/id/
hamzah@fkm.unsri.ac.id
Phone number: +6282184773402

Doktor der theoretischen Medizin (Dr. rer. med.)
Alumnus in the Institute for Occupational, Social and Environmental Medicine,
Faculty of Medicine of the Goethe University in Frankfurt am Main
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https://www.kgu.de/einrichtungen/einrichtungen-des-fachbereichs/zentrum-der-gesundheitswissenschaften/arbeits-sozial-und-umweltmedizin
hamzah.hasyim@stud.uni-frankfurt.de
Phone number: +4915905821418

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[Quoted text hidden]

journal.pone.0229838.pdf
928K

Prof. Dr. David Groneberg <groneberg@med.uni-frankfurt.de> 10 June 2020 at 18:10
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>
Cc: "\"Prof. Dr. rer. nat. Ruth Müller\"" <Ruth.Mueller@med.uni-frankfurt.de>, "Dr. Ulrich Kuch" <kuch@med.uni-frankfurt.de>, "\"Prof. Dr. rer. nat. Ruth Müller\"" <rmuller@itg.be>, "Dr. Ulrich Kuch" <thananomics@t-online.de>, sehr geehrte Frau Volante <volante@em.uni-frankfurt.de>

Dear Hamzah,
this is excellent!!!!!!!
We need to continue!!!!!!!

Mit freundlichen Grüßen,

David Groneberg

Prof. Dr. Dr. med. David Groneberg

Direktor
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Fax: +49 69 6301-83836
arbmed-klinik@uni-frankfurt.de

> Am 10.06.2020 um 13:01 schrieb Hamzah Hasyim <hamzah.hasyim@gmail.com>:
>
> [Quoted text hidden]
> <journal.pone.0229838.pdf>

Hamzah Hasyim <hamzah.hasyim@gmail.com> 10 June 2020 at 18:58