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Ensuring Responsive Action and Program Policy for Early Childhood Development and Education with Real-time Data Management

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Abstract

Objectives

At West Nusa Tenggara, data were scattered in various sectors and yet no real-time data management was set up in the time of the study. We reported the staging of process on designing an applicable real-time data management system within a provincial program to support child growth, development and education.

Materials and Methods

A formative study was carried out to gather necessary information through data mapping, in-depth interviews with key stakeholders, document reviews, and direct field observations on infrastructures.

Results and Findings

To obtain a full picture on child growth, development and education, data from various sectors and programs shall be mapped and linked in one Platform. We introduce the Open Smart Registry Platform (OpenSRP) to systematically compile the individual as well as group data (i.e. village or district profiles) across different aspects of child life, ranging from nutrition, health, education, etc. Using a tablet PC, data could be easily entered at anytime (real-time data) by the person in charge into Enketo form - a user friendly application developed by Ona Systems. Due to still poor infrastructure at the grass root level, the system also allows a safety store offline that could automatically link to server when network connection is available. The immediate data entry will provide real-time data report that could be accessed by any relevant stakeholders at any levels to response accordingly. However, to avoid misuse of data, the access will also be restricted with a secured login system.

Conclusion

Based on the formative study, the OpenSRP is easily applicable for real-time data management given the local setting.

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Keyword: real-time, data, child

Background

Many field workers who rely on paper record-keeping complain that manually compiling monthly and yearly reports for their supervisors takes more time than it should. Moreover, supervisors complain that reports they receive from workers are incomplete or poorly compiled[1]. One of the benefits of switching to a paperless record-keeping system is the ability to automate and standardize reporting at all levels in the field system[2]. Data entered could be automatically synced with the reporting module, so workers can access and compile their reports at any time. They can easily track their progress during the month or year without having to manually compile data. Supervisors and reporting authorities can rest assured that the data being reported is accurate and reflects real service provision and health events on the ground. They can easily detect anomalies with digitized reporting and significantly reduce the time to respond to an emergency, such as a disease outbreak, when it occurs[1].

In rural areas, or anywhere field workers might be spread out and hard to reach, having an online web portal and dashboard for daily monitoring is an efficient and smart way to ensure workers are regularly providing timely care to their clinets[2]. The smart registry web portal allows end user login for monitoring clinet data and printing paper reports of their data if required for submission. Supervisors at higher levels can login to monitor their health workers and view their service provision in real time along with aggregate data across all workers at a particular field level. The web portal can also archive data, in case a health worker needs to review older records which are no longer stored on the application[1].

Objectives

"Data should speak by itself", as valid and timely as it should be to determine both the responsiveness of action at the individual level and of policy at the macro level. At West Nusa Tenggara, data were scattered in various sectors and yet no real-time data management was set up in the time of the study. We reported the staging ofprocess on designing an applicable real-time data management system within a provincial program to support child growth and development.

Materials and Methods

Data mapping, OpenSRP is data set tracking system and data entry software that have designed for smart register using the tablets. The SRP uses Enketo smart paper webforms for data entry. we was implemented Enketo forms in conjunction with FormHub with support from Ona Systems and the hosted server.

A formative study was carried out to gather necessary information through data mapping, in-depth interviews with key stakeholders,document reviews, and direct field observations on infrastructures.

Results and Discussion

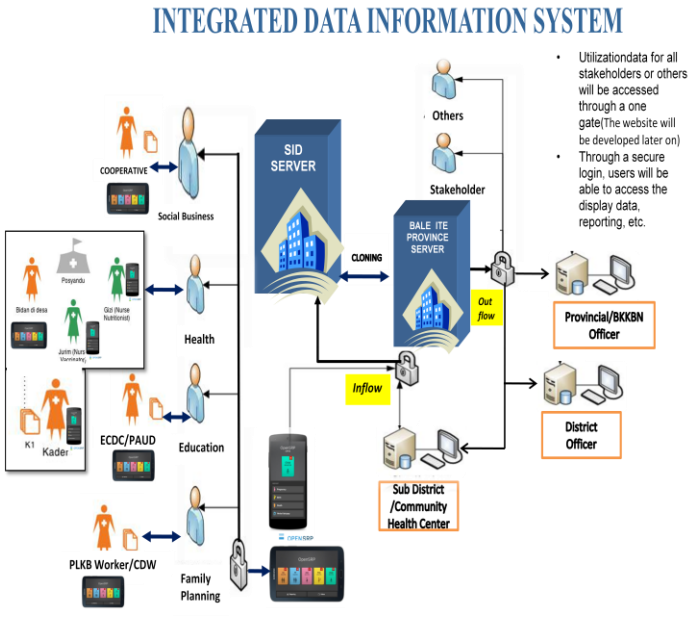
For the Golden Generation Project (GGP) Program we are integrating information and workflows across the education, health, social business and family planning sectors. This will occur through a

centralized information system and data platform – Open Smart Register Platform (OpenSRP), which will host all of the social business, health, education and family planning worker health registers, educational curriculum and working documents. Workers will have access to this system and their data through tablets, phones or desktops using a unique login, which will ensure appropriate service modes for each worker type.

The GGP will utilize tablets for data collection across the program, and workers from the business cooperative, Early Childhood Development Center (ECDC) and family planning services will have access to shared information from these three different sectors. Importantly, this will provide two-way communication and data sharing between the retrained Family Planning (PLKB) staff otherwise known as Community Development Workers (CDW), and the ECDC workers from the PAUDs, to enhance child tracking and monitoring for childhood cognitive and physical development.

To obtain a full picture on child growth and development, data from various sectors and programs shall be mapped and linked in one Platform. We introduce the Open Smart Registry Platform (OpenSRP) to systematically compile the individual as well as group data (i.e. village or district profiles) across different aspects of child life, ranging from nutrition, health, education, etc. Using a tablet PC, data could be easily entered at anytime (real-time data) by the person in charge into Enketo forms - a user friendly application developed by Ona Systems. Due to still poor infrastructure at the grass roots level, the system also allows a safety store offline that could automatically link to a server when network connection is available. The immediate data entry will provide a real-time data report that could be accessed by any relevant stakeholders at any level to response accordingly. However, to avoid misuse of data, the access will also be restricted with a secured login system.

The overall design, management and maintenance of the system will be managed by SID in agreement with all other stakeholders (Bappeda, BKKBN, Bale Ite). Data will be accessed by certain personnel within the system for purpose of data analyses and reporting process. Secondary data utilization for all stakeholders or others will be managed and accessed through one gate (website based) and will only provide access to summary or aggregate data that has been cleaned and approved for data dissemination. This process will be managed through secure logins and will require approval from District and Provincial level health officers. In addition, any data included in publications will only report summary or aggregate data to ensure the privacy and confidentiality of all clients and health workers are retained.



This includes digitized, secure, and easy to maintain data records. These forms are launched simply within the smart register screens at the tap of a button, and allow offline data entry where network connection is not always available. Data is safely stored offline until the device has a network connection again and the data isthen submitted to the secured server.There will be a backup server provided to keep the data updated if the main server gets into trouble. With Enketo webforms, users can easily jump between questions, answering them in whichever order best matches their workflow[3]. Enketo allows projects to include data entry validations and mandatory questions in their forms. In addition, Enketo offers advanced features such as data entry calculations and cascade selects, which are useful in forms where the user must select their location from a long, expandable list. Smart registers make these once time-consuming tasks easy to accomplish. Smart register has a customizable array of sort and filter options to rearrange and filter down the list of clients to a new list that matches the user's immediate work needs. Each smart register is equipped with a smart search feature, obviating the need to scroll and scroll through the lists when trying to search for a single respondents. The search results are instant, meaning the results start appearing as soon as we start typing. The search feature is also customizable to whatever search term is needed, whether a name or an ID number[2].

The SRP allows data entry directly in the interface. Data is collected on the app with Enketo smart paper forms, which are built to resemble paper, but supports advanced skip/form logic including constraint checks. To reduce typing errors, the packages uses a built-in data check algorithm to check the consistency and validityof each entry.If there is error or inconsistency found then it will be fixed directly. After all the data is entered into the server, then they have to be edited and cleaned before being analyzed[3].

Data entered through Enketo webforms is automatically synced with the reporting module, so health workers can access their reports at any time. They can easily track their progress without having to manually compile data each time. Supervisors and reporting authorities can rest assured that the data being reported is accurate and reflects real service provision and health events on the ground. In rural areas, or anywhere health/community development workers might be spread out and hard to reach, having an online web portal and dashboard for daily monitoring is an efficient and smart way to ensure workers are regularly providing timely care. The smart registry web portal allows end user login for monitoring their own data and printing paper reports of their data if required for submission. Supervisors at higher levels can login to monitor their health workers and view their service provision in real time along with aggregate data across all workers. The web portal can also store archived data, in case a health/community development worker needs to review older records which are no longer stored on the app. Currently, the SRP comprises of a server backend and Android based mobile phone client (SRP Client)[4].

we will implement Enketo forms in conjunction with FormHub with support from Ona Systems and the hosted server. The servers will be kept in central of Bale Ite under supervision Bappeda provincial, The other server will be under the oversight of SID and will be at a high dedicated connectivity location in Lombok and Jakarta. An undergraduate of computer is provided by government is responsible to maintain and daily backup the data in those servers. The person who has been

selected have a capability and skills to monitor, manage and maintain the server or server management. That person has to monitor all the other data and then coach the couple and what to do.All the primary data source inflow and outflow should be from the bottom of the page and the other user access should be on the top. Also, these data flow into a specific government system.And also be agreement that another person from SID or the cooperative will overseeing the system as well.

Data Utilization for all stakeholders or others will be accessed through one gate (website based) Through a secure login, users will be able to access the display data for analysis and reporting. Data in a database or in a statistical package will be restricted to those who have a password for access. In any reports or publications the confidentiality of all will be retained.

Data collected during project will be a real-time data processing and directly transfer into the SID server and then cloning to the Bale Ite server. Only limited personnel will have an access to the data concerned. Data will be accessed by certain personnel under the study for purpose of data analyses and reporting process. checking the data that has been collected for validity and internal consistency by automated data processing scripts customized to the needs of the project data. The scripts will flag in real time inconsistencies and alert a supervisor of potential problems requiring correction. checking the validity and internal consistency check for all data that goes into the server database on daily basis.

Conclusion

Based on the formative study, the OpenSRP is easily applicable for real-time data management given the local setting.

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