ANALYSIS AND DESIGN OF EARLY WARNING APPLICATION FOR PREGNANT WOMEN HEALTH FOR ACCELERATION REDUCE MORTALITY RATE MOTHER AND BABY WEB BASED AND SMS GATEWAY

[1]Made Kamisutara, [2]I Putu Artaya

Teknik Informatika, Ilmu Menejemen, Universitas Narotama Surabaya
INDONESIA

Emails: [1]kamisutara@gmail.com, [2]putu.artaya@narotama.ac.id

ABSTRACT

The Millennium Development Goals (MDGs) goal is to reduce maternal mortality and child mortality rates. These two factors are the main goals of development in the health sector in Indonesia. The achievement of the MDGs objectives is an aggregate of the data of each Regency / City. The target of the decline in maternal mortality does not reach the target set. To support the achievement of the MDGs, there is a need for support and cooperation from various stakeholders, from strategic planning, implementation, to evaluation and monitoring.

All districts monitor data of illness and mortality of mother and child. However, the implementation is still far from the hope of being able to provide accurate, fast and complete data. Stake holders often get late information about the event of sickness and death. In fact, the data is incomplete. District or Provincial Health Offices receive invalid reports. The data is the result of estimation from past condition. It happens because the lack of personnel who understand the importance of monitoring and lack of skills in running the right surveillance system.

It needs a system that can facilitate hospital or health service to monitor the health condition of the population to reduce maternal and infant mortality. We analyze and design systems that connect with sms gateway so that people can access information via web or sms.

Keywords: Early Warning, SMS Gateway, Pregnant Mother, Mortality

INTRODUCTION

Maternal and child health (MCH) is a complicated issue in Indonesia. Improving the quality of health services requires the conducive of socio-political, legal and culture. Based on the Indonesian Demographic and Health Survey (IDHS) 2015, maternal mortality still stands at 228 per 100,000 live births. Despite various improvement efforts and handling has been done, but it is realized still needed a variety of support earlier. MCH program aims to improve the health, especially mother and child optimally. One important element to support the goal is the availability of data and information that is very useful in planning, implementation, monitoring, and evaluation of health service outcomes. Most maternal and child health programs have not been supported by adequate information systems in terms of recording, processing, and analysis as well as interpretation and reporting.

All districts monitor data of illness and mortality of mother and child. However, the implementation is still far from the hope of being able to provide accurate, fast and complete data. Stake holders often get late information about the event of sickness and death. In fact, the data is incomplete. District or Provincial Health Offices receive invalid reports. The data is the result of estimation from past condition. It happens because the lack of personnel who understand the importance of monitoring and lack of skills in running the right surveillance system.
With the Early Warning Application of Maternal Health, it is expected to contribute to provide accurate data so that it can make the right decision in order to reduce maternal and child mortality during childbirth.

RESEARCH METHODS
This research uses waterfall method. It is also known as classic life cycle. It describes a systematic and also sequential approach to software development. It starts with user requirement specification. Then, it goes to stages such as planning, modeling, construction, and deployment, which ends with support for the complete software generated (Pressman, 2012). Stages of waterfall method are as follows:

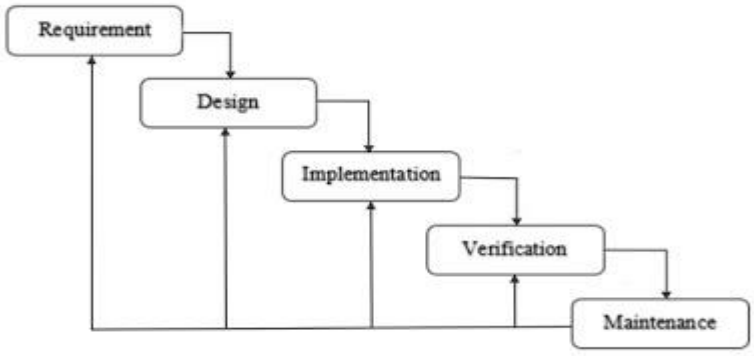

Figure 1. Stages of waterfall method

Waterfall method has several sequential stages: requirement analysis, design system, coding & testing, and program implementation, maintenance. The stages of the waterfall method are as follows:

1. Requirement Analysis
   At this stage, the system developer must communicate with the user so that the developer knows the software the user expects. This information is obtained through interviews, discussions or direct surveys. Then, it is analyzed to get the data needed by the user.
2. System Design
   Specification needs of the previous stage will be studied in this phase. System design helps to determine the hardware and system requirements as well as to define the overall system architecture.
3. Implementation
   At this stage, the system was first developed in a small program called a unit, integrated in the next stage. Each unit is developed and tested for functionality. It is called unit testing.
4. Integration & Testing
   After testing each unit, all units are integrated into the system. Then, it is tested to check for any failures or errors.

5. Operation & Maintenance
   The finished software, it is run and maintained. Maintenance includes fixing errors that were not found in the previous step. Improve the implementation of system units and improvement of system services as new needs.
   Source : Pressman, Roger S. 2012. *Rekayasa Perangkat Lunak – Buku Satu, Pendekatan Praktisi (Edisi 7).* Yogyakarta: Andi.

System Analysis

Current running system

At this stage, the authors conducted a direct interview with the hospital staff. This interview was conducted to obtain information, current problems and supporting documents data in the form of hard copy and soft copy. Problems of hospital are as follows:

1. The handwriting of SIP data causes the difficulty of searching data because data is difficult to read, except by the officer who records the data.
2. Posyandu officers often use a handbook to record SIP registers. Then, it is moved into the SIP register.
3. Data is not written efficiently because it is written over and over again into different formats. It causes data redundancy

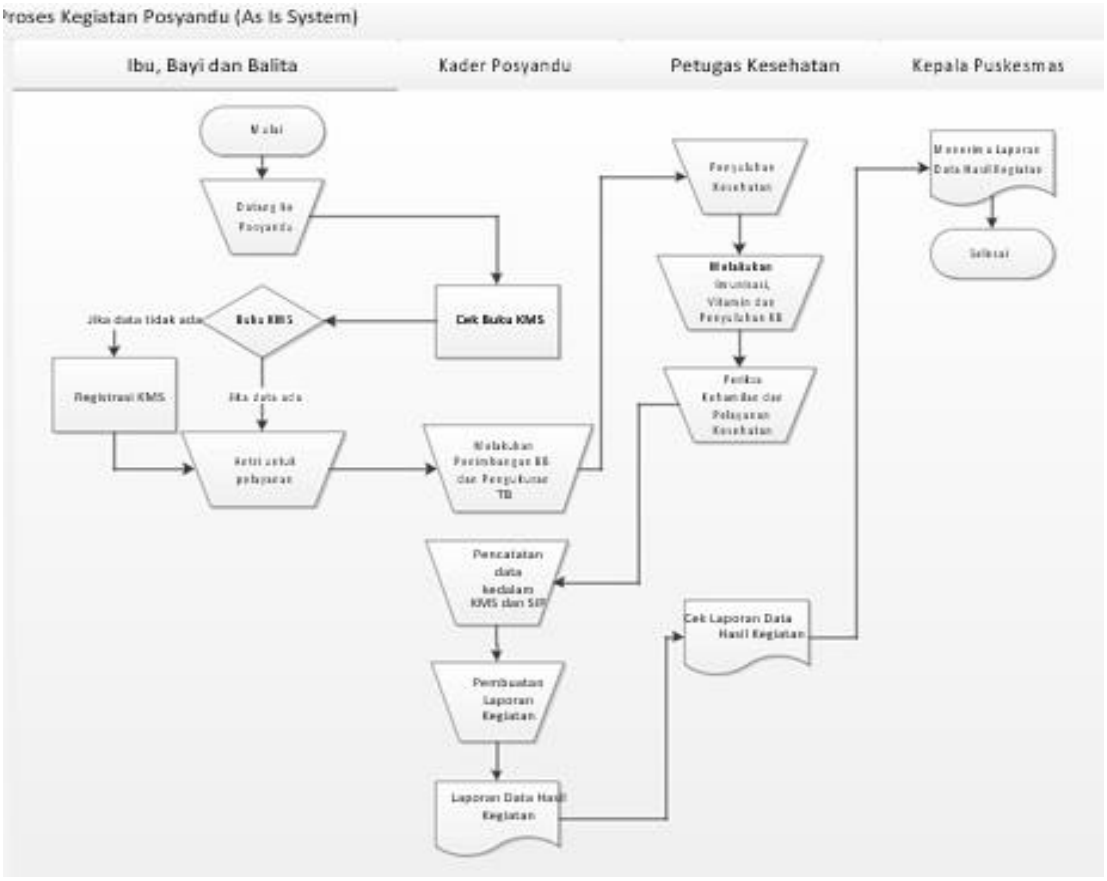

Figure 2. Current Business Process

To-Be System

The system is created at this stage. It is based on current problems and system requirements. Figure 2 is a system business process to be created (To-Be System).

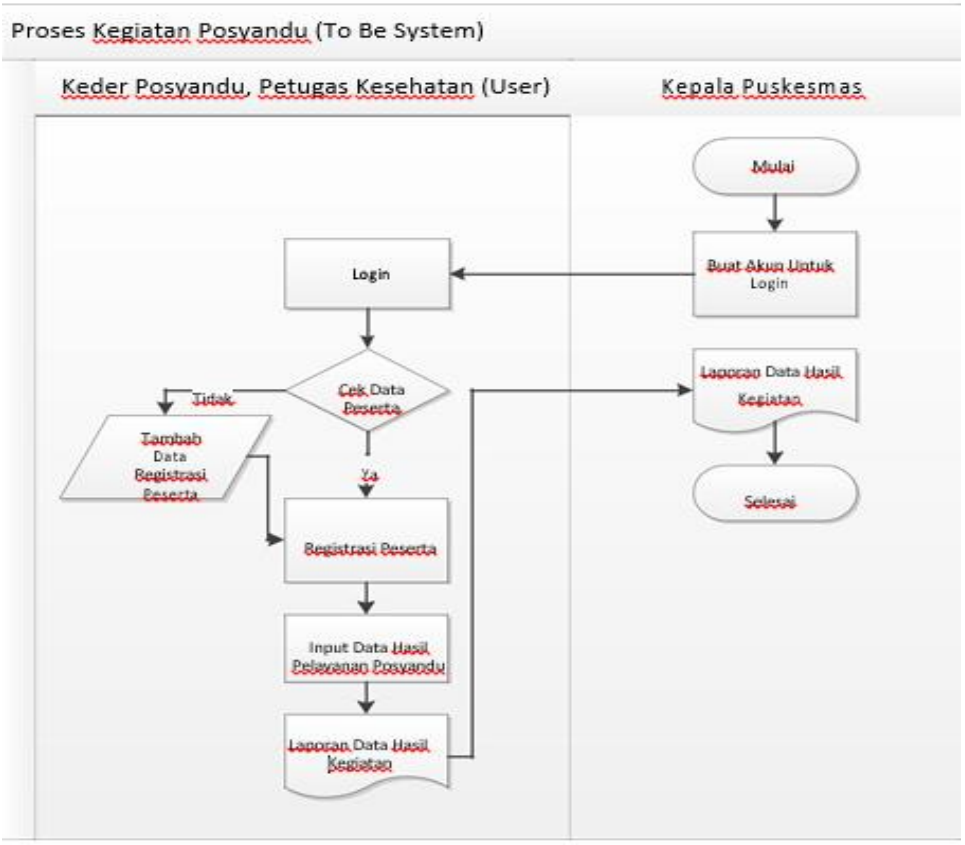

Figure 3. Business Process to be created

System planning

The use case diagram illustrates the functionality of an early warning system application of pregnant women's health. The system is accessed by two users, the general user and admin user. General users can access 11 functionality systems, while admin user accesses 9 functionality systems. The arrows that connect between the admin user and the general user are generalizations. It means everything that can be done by a general user, can also be done by the admin. For detailing each functionality and image of the interface design report each function is described in the next chapter. The use case diagram is illustrated as follows:

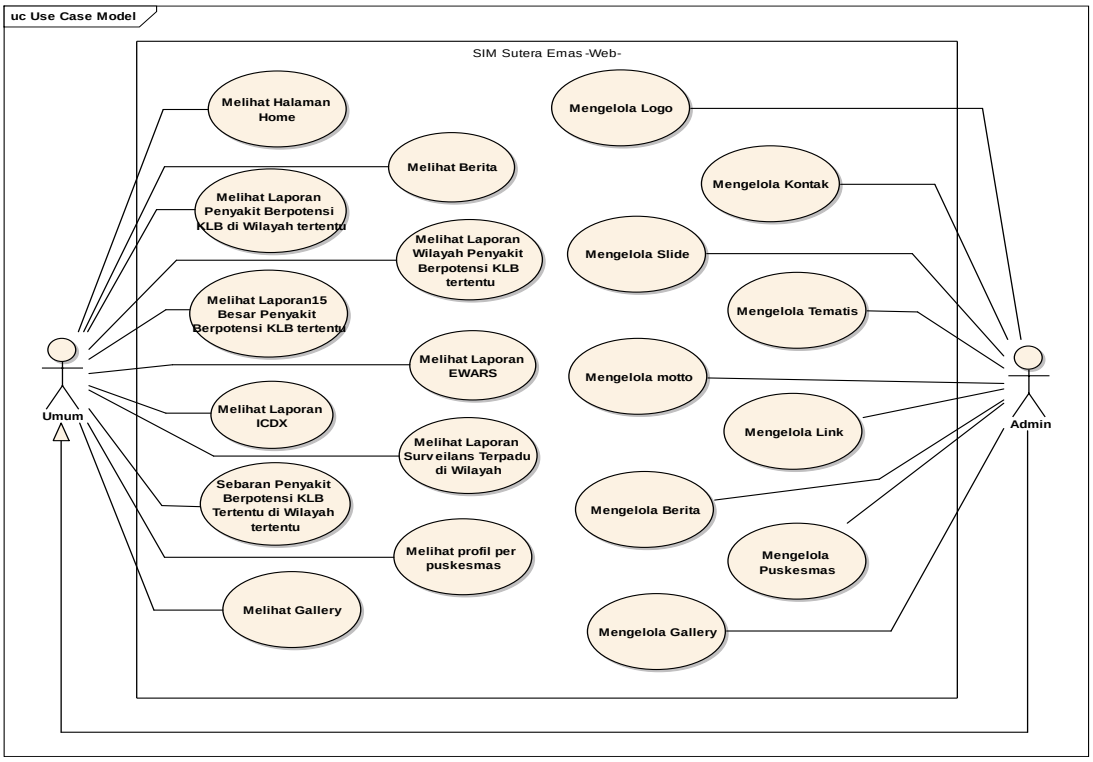

Figure 4. Use Case Systems

RESULT AND DISCUSSION

USER ADMIN

1. Log In

To enter into this application as an admin, you must login first. Then, you will go to the main page. You can access other features. Illustration of login page is as follows:

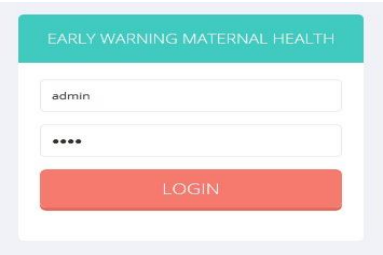

Figure 5. Log in page

2. Home Page

The Home page is the start page displayed when opening this website. When it opens the start page or when you press the "Home" button, the system will bring up the page:

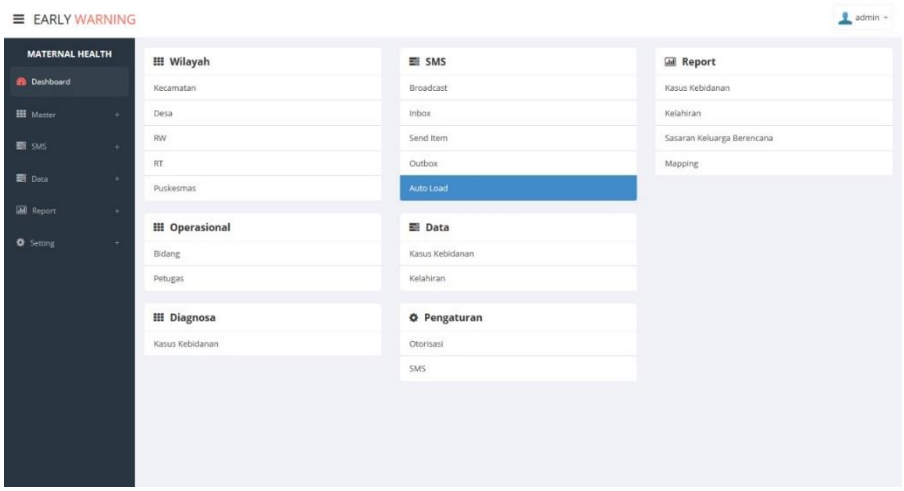

Figure 6. Home

3. Master Community Health Centre (Puskesmas)

To add a new Community Health Centre Profile, the admin presses the "Add Community Health Centre" button on this page. Then, admin fills in the title and description of *Community Health Centre* Profile on the available column.

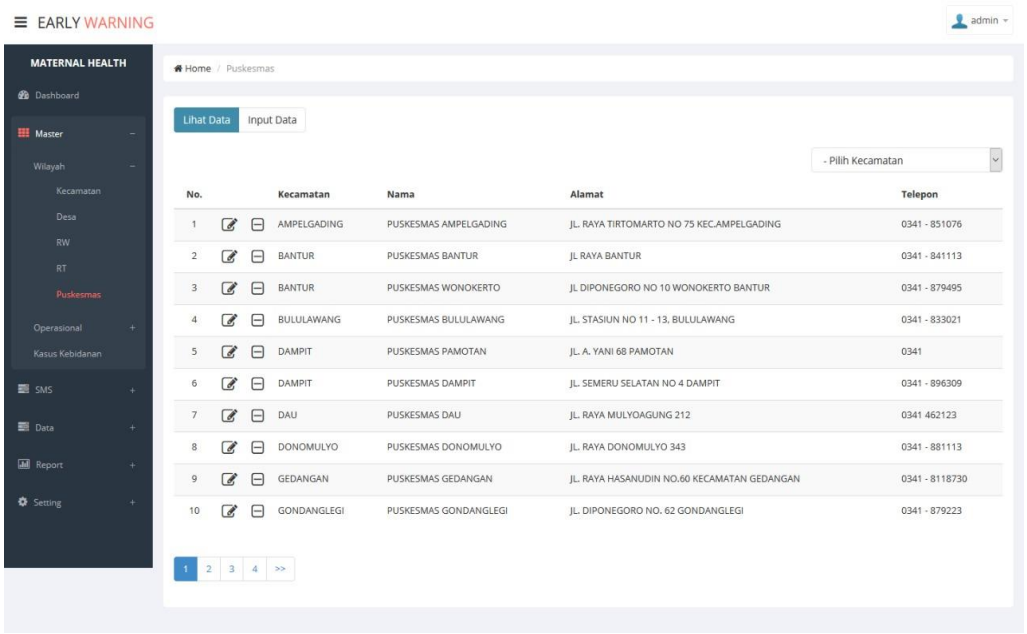

Figure 7. *Community Health Centre*

4. Officer

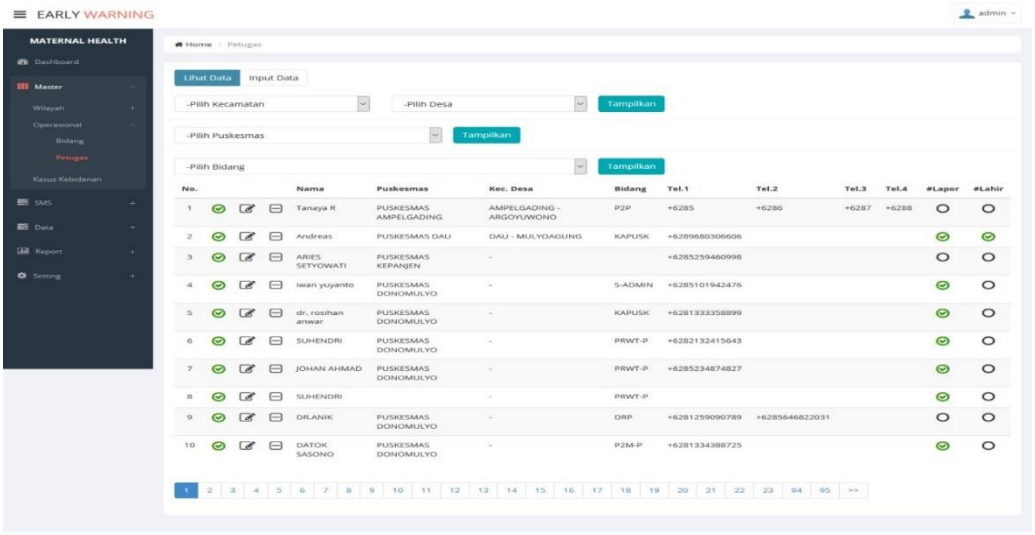

Figure 8. Officer

CONCLUSION

Early Warning Application of Pregnant Women's Health can provide early information to midwives, doctors and officers at community health centers and health departments so that they can provide services to the community quickly and accurately.

After the application program is run, especially in Community Health Centre Kepanjen, is expected to reduce the mortality rate of mother and child during childbirth.

REFERENCE

Khayati, Nur, Sri Yuliati, dan M. Arie Wuryanto, 2012. Beberapa Faktor Petugas yang Berhubungan dengan Pelaksanaan Surveilans Epidemiologi Malaria Tingkat Puskesmas di Kabupaten Purworejo. Jurnal Kesehatan Masyarakat FKM UNDIP, 1 (2): 364- 373.

Survei Demografi dan Kesehatan Indonesia (SDKI) , 2015

Kristanto Andri, 2010, Perancangan Sistem Informasi dan Aplikasinya, Jogya, Java Media

Pressman, Roger S. 2012. *Rekayasa Perangkat Lunak – Buku Satu, Pendekatan Praktisi (Edisi 7).* Yogyakarta: Andi.

Dharwiyanti, Sri dan Wahono, Romi, Satria. Pengantar Unified Modelling Language (UML) : http://www.ilmukomputer.com/umum/yantiuml.php.2003

Munawar. Permodelan Visual dengan UML : Graha Ilmu. Yogyakarta, 2005

William Davis S, 1983, Sistem Analysis & Desaign : A Structured Approach Addition – Westley Publishing Company.