S-GIS: DIGITAZING SKIN DISEASE SPREAD IN LAMPUNG PROVINCE INDONESIA

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ABSTRACT

Skin disease is a common disease whether in urban or rural area. Various types are listed in this category. Some of them are easily transmitted and turn into epidemic. To help the health department or other parties to map the spread of the diseases as well as to broadcast the information easily to the citizen, thus it is important to develop a system that able to provide data based on gograpfical. Furthermore, the data should be easily to be accesed.

To enable related parties to be able to collect, store, and analyze the spread of skin disease particularly in Lampung Province Indonesia, a geographical information system has been developed. In addition, this system acts as a monitoring tool for Government or Agencies that responsible for the health issues in Lampung and Indonesia.

KEY WORDS: geographic information system, skin diseases spread, Lampung Province.

1. Introduction

Lampung Province is located in the most south of Sumatera island of Indonesia. The province had a population of 7,880,769 at the 2013 census [1] and has total area 35,376 km^2 [2]. Lampung is subdivided into twelve regencies and two autonomous cities [2].

In Lampung, according to data from the Department of Health from 2009 – 2012, a number of people who was infected by leprosy, one of skin disease, was slightly rose from previous period for about 0, 33 per 1,000 people. The level of cure rates from this disease, however, still less than 90% [3].

In specific area, for instance Bandar Lampung, the graphics are same. For period 2009 – 2013, the New Case Detection Rate (NCDR) of leprosy tends to rise (figure 1) [4].
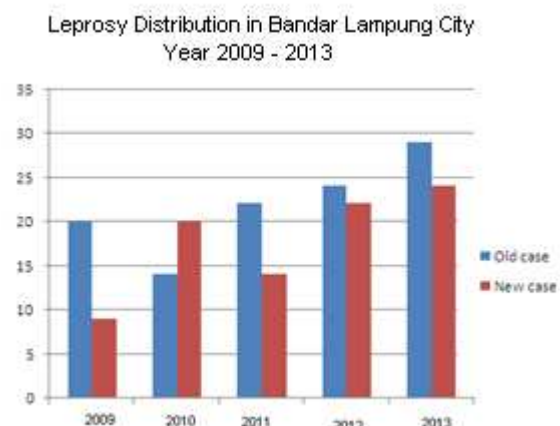

Figure 1. Leprosy Distribution in Bandar Lampung City

To facilitate the health department and related parties to map the spread of the skin diseases, the geographic based information system, called S-GIS is built. In addition, this system is able to be a center of information about the diseases. Hence, the public will be easy to access the information as well as monitor it.

2. Geographic Information System in Health

Geographic Information System is widely used in the health field to map the spread of a particular disease area. According to Musa, et al [5] GIS has been used in the health sector since the 5th century country China, Greece, and India. In the 18th century, the first modern map of the disease had been created by Leonhard Ludwig Finke. This map is an important tool for

understanding the spread of the disease and the relationship between the diseases and environmental conditions. With the development computer science in the 20th century, the map can be made more quickly and more precise calculations. In addition, the spread of the disease can be easily mapped and analyzed.

In 2012, Loughnan, et al [6], uses GIS to map the risk of heat stroke in urban areas while the summers are very extreme region Melbourne, Australia. While Curtis, et al, utilizes video spatial data which is then translated into the GIS to analyze the risk of diseases associated with changes in the urban environment [7]. In 2015 [8], Ebener, uses GIS to map the health of mothers and newborns to support develepment Millennium Goals. In the same year, Ayanlade, et al, uses GIS and Remote Sensing Technigue to manage the spread of epidemic meningitis in Northern Nigeria.

3. Proposed System

The system is built to be able to run on personal computer, laptop, notebook and other media that support connection to internet and has a web broser application installed as well. Users can use various web browsers such as Mozilla Firefox, Google Chrome or Opera.

The sytem covers information the spread of skin dieases in all regencies and autonomous cities of Lampung. User access the Skin Diseases Database (SDS), where all the data are stored, and view the map through the server.
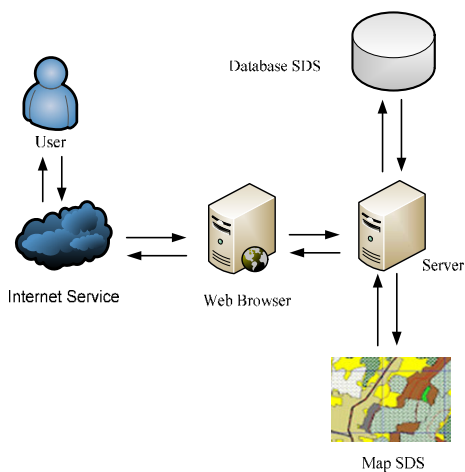

Figure 2. Architecture System

The user of this system is divived into three categories: administrator, operator, and guest. The administrator is responsible to manage the entire system, adding new operator, adding new data of regencies and autonomous cities. The operator has responsibility to input the data. The guest is people or other parties who want to view and get the information from the system.
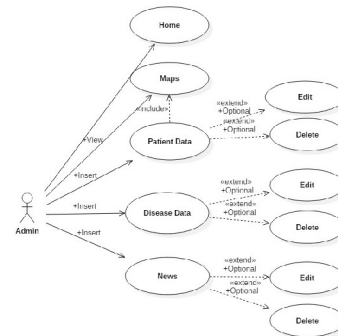

Figure 3 Use Case for Administrator

The system is built using PHP language program, while the database is using the MySQL. The maps menu is linked to google maps.

4. Result and Discussion

The information system has six main menus which are home, maps/peta, disease/penyakit, patient/penderita, and login. Each of menus has it own function. For instance, home menu has function to be a front cover of the information system.
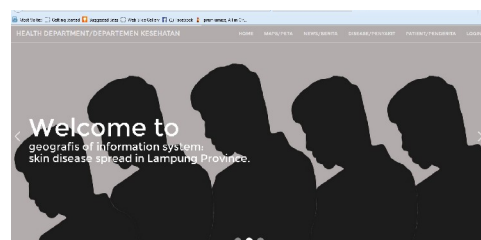

Figure 4. Home Menu

On menu Disease/Penyakit, there are three fileds that need to be filled by the operator system, the code of disease, the disease itself, the image and the symtomps of the disease. This menu is itended to give information about the various skin diseases and to let the viewers or visitor able to check their skin if infected by one of the diseases.
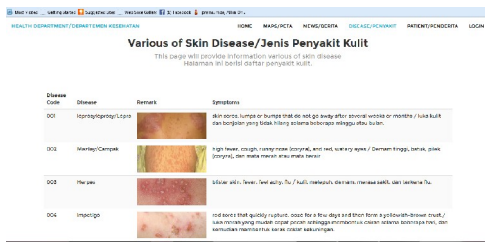
Figure 5. Various of Skin Diseases Menu/Jenis Penyakit Kulit

To be able to map the spread of the skin disease, the operator needs to provide information about the data of patients. This data will be not published, to ensure the confidentiality of the patient, only operator and administrator who able to view this page. However, for the few parties who have right to get this data, they will be able to request it by contacting the operator.
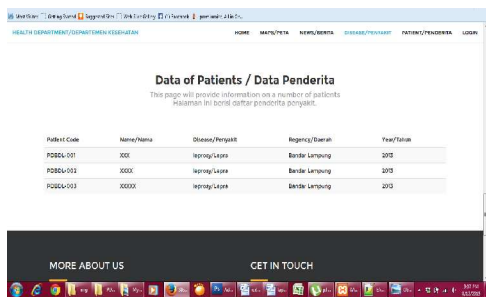

Figure 6 Menu Data of Patient/Data Penderita

Once the data of patients have been entered, the operator will be able to view a number of patients in particular area. This information helps the viewers to see the data largely. Thus, they will be able to see the dissimilarity of the patient in particular period.
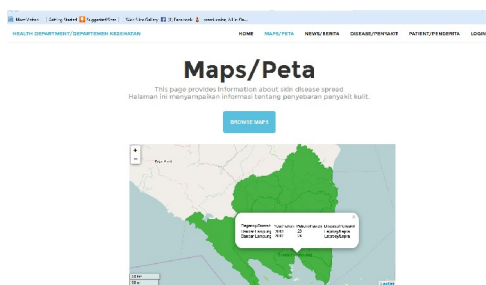

Figure 7 Maps/Peta

To optimize the function of the system, news menu is developed. Operator can publish information about how

to detect skin diseases, how to cure them, and other information. Hence, the viewers will get numerous of valuable information and aware about their health.
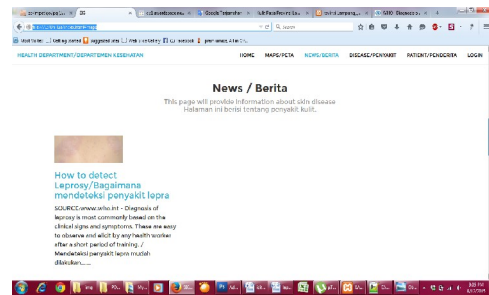

Figure 8 News/Berita

5. Conclusion

In Conclusion, the system to provide information regarding the spread of skin disease based on geographic of Lampung Province has been built. This system helps health department to broadcast the information to increase the awareness of health in society.

To take full advantage of the system, some functions such as type of skin diseases and news have been sucefully added.

Acknowledgement(s)

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