



# RECORDING NATURAL DISASTER VICTIM PATIENTS BY USING ANDROID-BASED IN JEMBER REGENCY

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**Abstract.** In 2018, in Jember Regency there were at least 42 natural disasters recorded consisted of whirl wind, flood, landslide, forest and field fire, high tide, and earthquake that caused minor injuries, severe injuries, or dead victims. In handling the natural disaster patient, medical officers should be in a hurry because of the suddenly high work load. The demand to give a quick service along with the increasing risk level, the demand to record natural disaster victim patient quickly and easily accessible, the demand to give a quick service of searching and reporting the natural disaster victim patient make the recording of natural disaster victim patients can not be conducted effectively if it is still in a conventional way. This research is a qualitative research that based on a product which is recording the natural disaster victim patients by using android based in Jember Regency. The research method used is waterfall method. The Application for the Recording of the Natural Disaster Victim Patients has been tested and simulated by BPBD and TAGANA team in Jember Regency and obtain user satisfaction level as much as 80%. Application development will be done in stages, hoping to be useful for the government.

## 1. INTRODUCTION

Disaster is an incident or series of incident that threat and ruin the life and the living of society that caused by natural factor and/or non natural factor, or even human factor so that it causes victim, environmental damage, property loss and psychological effect. Meanwhile, natural disaster is a disaster that is caused by an incident or series of incident because of the nature, among of them is earthquake, tsunami, volcano eruption, flood, drought, hurricane, and landslide [1]. Indonesia is an archipelago country that is prone to natural disaster. It happens because geographically, Indonesia is located at the meeting point of 3 (three) tectonic plates; Eurasia, Indo-Australia, and Pacific. Beside that, Indonesia is passed by volcanic arc that lies from Sumatera, Jawa, Nusa Tenggara, until Sulawesi which its edges are old volcanic mountains and low land where the land is swamp. The activity of the plate fractures and volcanoes in Indonesia can trigger some disaster like earthquake, tsunami, and landslide [2]. Based on the data collected in the Data Informasi Bencana Indonesia (DIBI)-BNPB, it can be seen that more than 1800 happening of disaster in the period of 2005 until 2015 is more than 78% (11.648) of the disaster is hydro meteorological disaster and only about 2% (3.810) is geological disaster. Disasters from the hydro meteorological group are flood, extreme tide, forest and field fire, drought, and extreme weather. Meanwhile, the geological disasters that happen often are like earthquake, tsunami, volcano eruption, and landslide. The number of the disaster incident totally for both group type is tend to increasing [2]. Based on data from BPNB 2019, East Java is in the third rank of the most natural disaster incident. The position of natural disaster incident in Jember Regency

itself is in the first rank of East Java, especially the flood natural disaster [2]. In 2018, Jember regency experienced some natural disasters started from whirl wind, flood, landslide, forest and field fire, high tide, and earthquake that they cause victims of minor injuries, severe injuries, and dead victims [3]. The many of the victims make the medical officers have high working demand than usual. In handling the natural disaster case, medical officers are demanded to work quickly and precisely and also they are demanded to give the accessible patient information. The demand to give a quick service of searching and reporting the natural disaster victim patient make the recording of natural disaster victim patients can not be conducted effectively if it is still in a conventional way. In Jember, the recording of the natural disaster victim patients is conducted manually. It happens because there is no special application to conduct the recording of the natural disaster victim patients and there is also no internet access when entering the disaster area. This application is designed as a preparation in anticipating disaster incident and it has been adjusted with the design of medical record form based on the Health Ministry Republic of Indonesia Rule Number 269/MENKES/PER/III/2008 about medical record and also considering the suggestions from BPBD colleague and the Nurse of Natural Disaster Response in Jember Regency [4]. This application keeps the data of natural disaster victim patient by offline. However when it is in the location that has internet access, then the data which is kept can be sent to the server (BPBD). This application is made by using Android Studio as the programming language, MySql as the database server, Apache Web Server as the web server and code igniter as the used framework.

## 2. WORKING METHODOLOGY

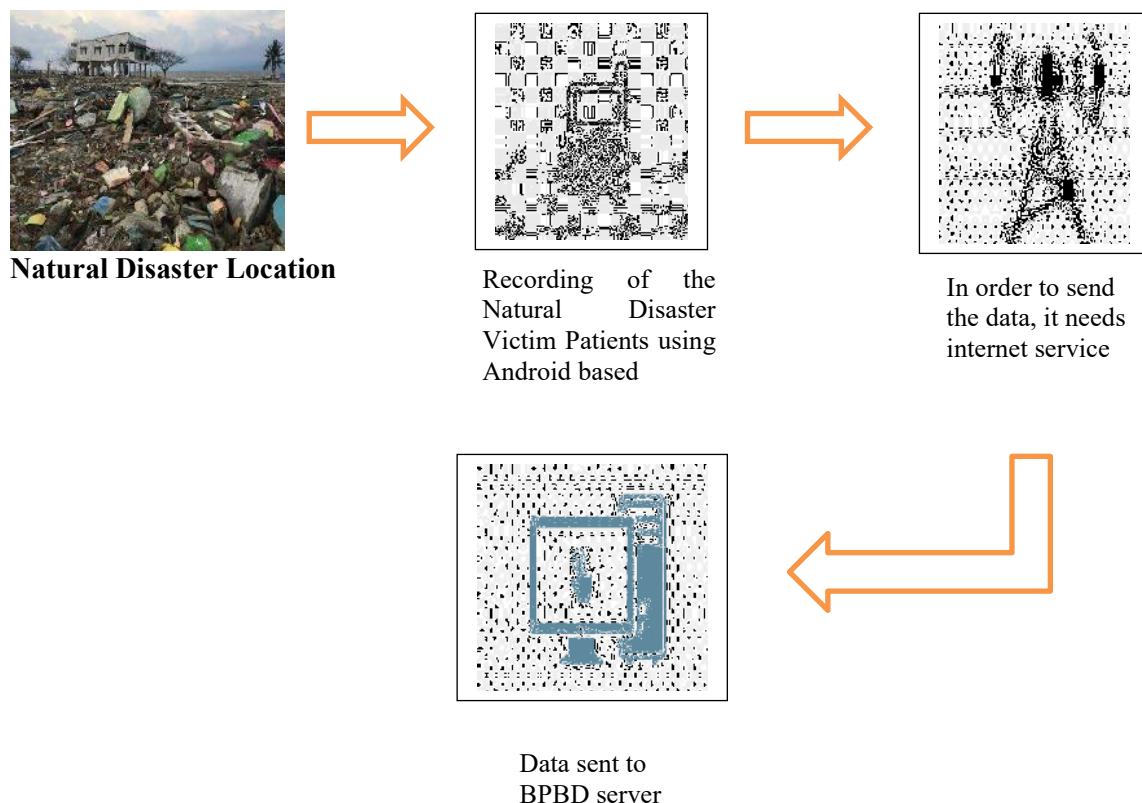


Fig 1. Working Methodology

The picture above is a simulation of the recording the natural disaster victim patient application using android based. First, when there is a natural disaster which causes many victims, the BPBD team will do the evacuation of the victims either they are dead or they are still alive to be

brought to the health posts which are usually built in the location. Medical team in the posts conducts the recording of the natural disaster victim patients. Usually in the disaster location the internet and other communication means will be disconnected, so that the application will conduct the recording by offline. When it is enough, the device that is used for the recording will be brought to the area that is still connected for communication means especially internet so that the data that has been input to the device can be sent to the BPBD server to be reported to public. Basically BPBD has had an application for conducting data collection of the natural disaster. However, it only collects data about material loss not the victims, so that this application for recording the natural disaster victim patients can complete the BPBD application.

### 3.1 Research Location

This research was conducted in BPBD and also by asking suggestion from the Nurse of Disaster Response in Jember Regency.

### 3.2 Research Methodology

The frame of this research is described in Fig 2 that shows the set of activity during the research conducted, which produces an application for recording the natural disaster victim patients using Android based in Jember Regency where the steps involves:

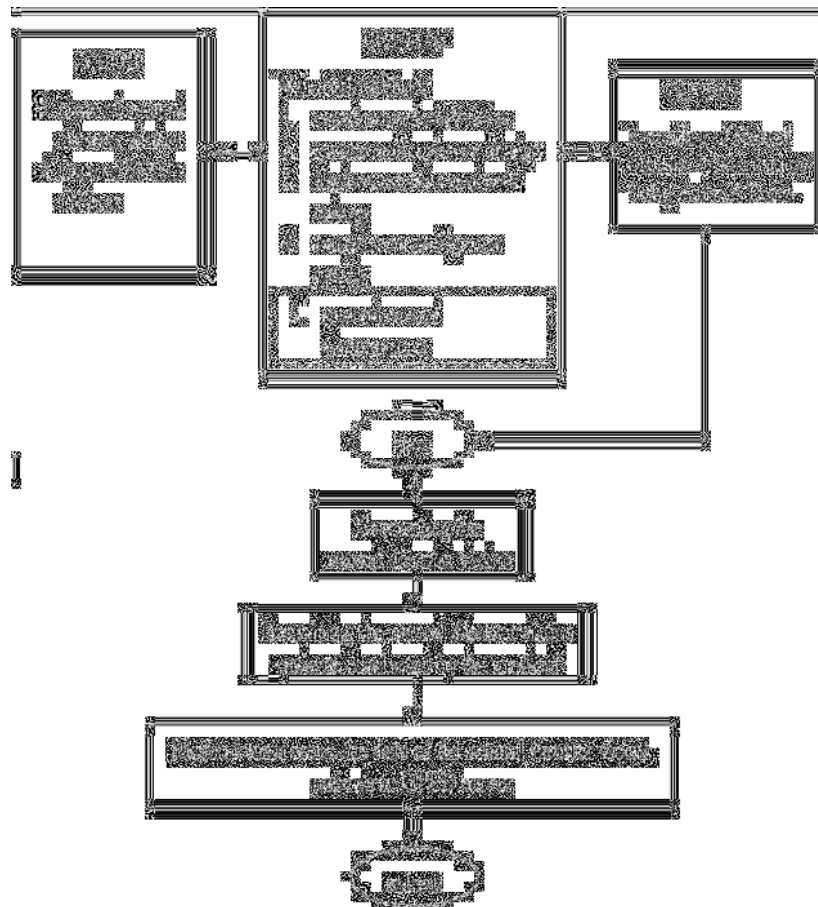


Fig 2. The frame of the Research Concept

## 4. EXPERIMENT AND RESULT

### 4.1 Homepage display and login user in the application

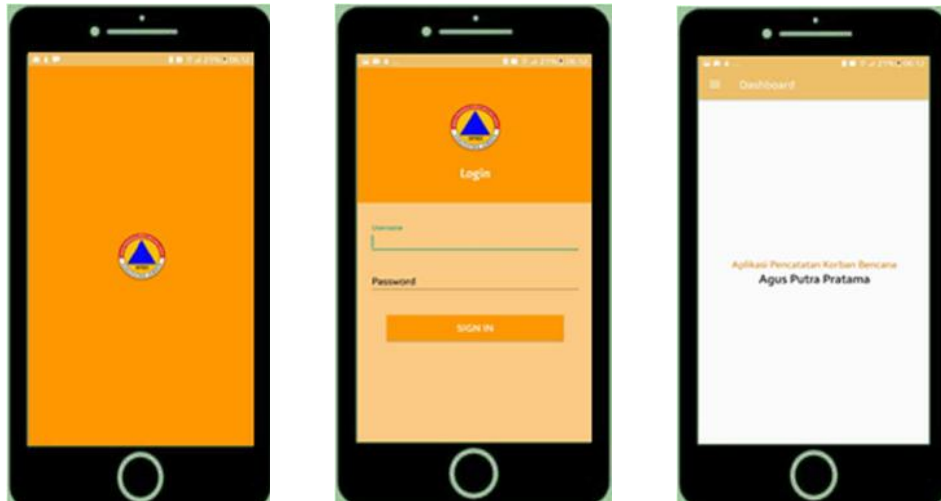


Fig 3. Homepage display and login user in application

Fig 3 is the front picture of the application and login user page. The writer uses BPBD logo in the front page because this research is conducted in BPBD and also after accepting the suggestion from the Nurse of Disaster Response in Jember Regency. The login page is used by user or medical officer that will conduct the recording of natural disaster victim patients. There is only one button in the login page, which is “sign in”. Since the application is especially made for medical officers, so that there is no “sign up” order. So, before users enter the application, the admin will make them password and username through back end feature in the application.

### 4.2 Homepage Display Application

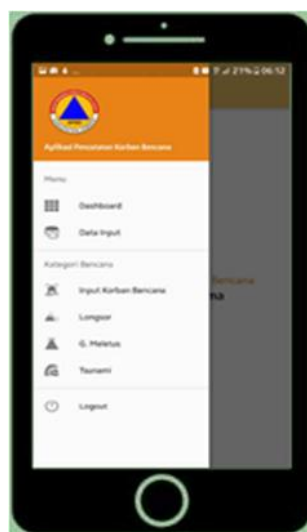
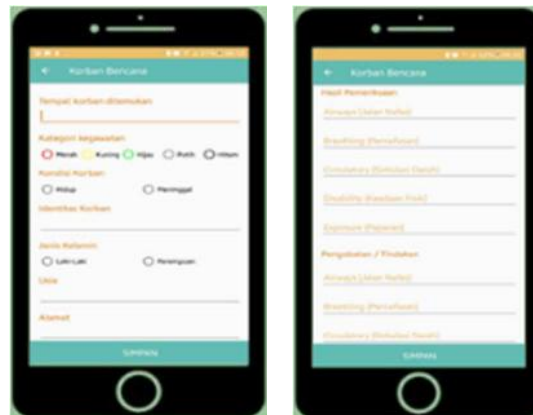


Fig 4. Homepage Display

Figure 4 is the homepage display picture in the application that is useful to input what disaster is happening and where the disaster happens. So, before conducting the recording of the natural disaster victim patients, the medical officer must first input the type of disaster and the disaster location. The available option of disaster type temporarily is only landslide, volcano eruption, and tsunami. In the future there will be more disaster type options.

#### 4.3 The display picture of the recording input result of the natural disaster victim patients



**Fig 5.** The display picture of the recording input result of the natural disaster victim patients

Fig 5. is the display picture of the recording input result of the natural disaster victim patients. In the application, there are some input results that must be fulfilled by the medical officer, among of them are:

- a. The place where the victim is located  
This input result is very important to find out where the position of the victim is when he/she is located so that the medical officer can predict the cause of injury of the victim
- b. Emergency Category  
Emergency category is made with colorful option so that medical officer can be faster and more efficient in conducting the recording of the natural disaster victim patients. The colors which are existed in the options is based on the triage color of patient emergency [5]
- c. Victim Condition  
The victim condition is also made with option system, by choosing the condition of the patient whether he/she is still alive or dead. If the victim is found in the dead condition, there is nothing to be input further.
- d. Victim Identity  
Victim identity can be fulfilled if the victim is still alive. If the dead victim is found, then it is the duty of the police officer to handle based on the BPBD SOP. The victim identity involves the age, gender, and address of the victim.
- e. Examination Result  
The examination result is detailed on the 5 conditions, which are the condition of breathing way, breathing, blood circulation, physical condition, and exposure. It has been appropriate with traumatic case primary management [6]
- f. Medication/Treatment  
Medication/Treatment contains every medication/treatment that the medical officer has given to the patients before they are taken to the nearest hospital.

## 5. CONCLUSION

The Application for the Recording of the Natural Disaster Victim Patients has been tested and simulated by BPBD and TAGANA team in Jember Regency and obtain user satisfaction level as much as 80%. This application has also been suitable with what BPBD and TAGANA of Jember Regency want. This application will be developed better further by cooperating with health department and hospitals in Jember Regency.

### **Acknowledgments**

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