Jurnal Mantik
Volume 4, Number 3, Nov 2020, pp. 2056-2062 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik

Patient Medical Record Information System as Big Data Implementation with NIK in Tegal City Health Service

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ARTICLE INFO

Article history:
Received: 01/11/2020
Revised: 08/11/2020
Accepted: 23/11/2020

Keywords: *Online Applications, Medical Records, NIK.*

ABSTRACT

The advancement of health technology that is fast and accurate is increasingly becoming the main requirement of decision-makers. Hospitals, clinics, health centers as institutions that store so much data also require correct and precise data processing that can be presented in the form of reports. Meanwhile, keeping traditional medical record files requires a large area and is prone to the impact of natural disasters and fires. According to patient's point of view, the physical documents of medical records such as medical cards, X-rays, ultrasound results, ECG results and others also have a risk of being lost or damaged and so that it becomes troublesome. With a modified Borg and Gall model development procedure, the products produced by the medical record application are functioned to facilitate the performance health center staffs and doctors, as well as to be more effective and efficient system and integrated NIK data.

1. Introduction

With advances in health technology, fast and accurate information is increasingly becoming the main need for decision makers. In other words, information is a basic need needed by every management to make decisions.[1]. Hospitals, clinics, health centers and practicing doctors as institutions that store so much data also require correct and accurate data processing that can be presented in such a way as a report.[2].

Cloud computing technology, big data and the Internet of things (IoT) are currently measuring the benchmarks for the existence of the 4.0 industrial revolution. Information that is easily available and easily accessed at very high speeds via the internet allows the public to obtain information in real time[3][4]. Government infrastructure in the field of information technology, such as the internet, has now been developed and spread throughout the Indonesian island[5]. The existence of Electronic KTP as an implementation of big data has begun to penetrate many aspects of public services. Of course, this allows e-KTP with the NIK number to be the key for someone to access and access the data by whoever has an interest. Included as a key to the identity of medical records[6]. The existence of e-KTP supported by IOT technology allows the construction of an integrated online system, as well as from the patient's side can carry out medical examinations anywhere by submitting their medical records through the NIK on the e-KTP.[7].

In Tegal City, almost all health services have used a Health Information System such as Puskesmas, Hospitals and several Clinics. The health information system in Puskesmas is called the Puskesmas Management Information System (SIMPUS), which is an integrated and multi-user designed information system that is prepared to handle the entire puskesmas management process.[8]. SIMPUS consists of biographical data and patient medical records using a web-based system[9].

Research conducted by Wimmie Handiwidjojo with the title electronic medical record, which contains an electronic medical record system that can only be accessed at one hospital health service. The medical record has a weakness that medical record data cannot be accessed by patients in all health care providers that are spread out in one area[10].

2. Research methods

2.1 Method used

The research method used is the method of research and development or Research & Development

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(R&D). Research and development methods are methods used to produce a product and test the effectiveness of the product in accordance with development objectives. The product produced from this research and development is the Patient Medical Record Information System as the implementation of Big Data with NIK. The methods used include descriptive and evaluative methods. Descriptive method is used to collect conditions that exist in the field. The evaluative method is used to evaluate the Patient Medical Record Information System in the Tegal City Health Service which is manifested in the form of a Big Data Implementation Application with NIK, Through product evaluation and trial process, it is hoped that input can be obtained about the advantages and disadvantages of the product. In the development of the Patient Medical Record Information System as the Implementation of Big Data with NIK, the development procedure of the modified Borg and Gall model was carried out.

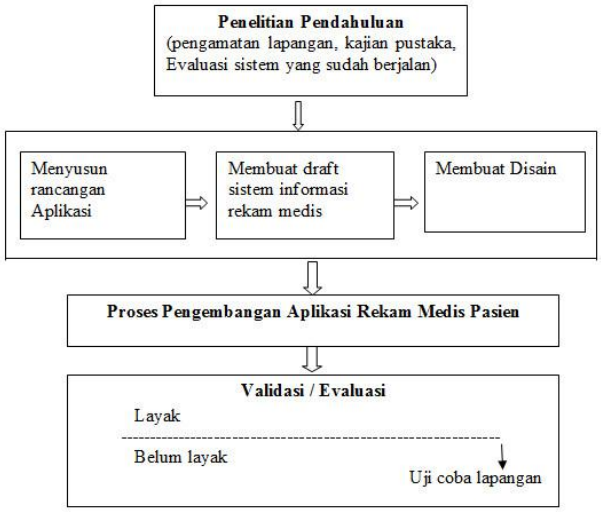

Fig 1. Research Chart

2.2 Data Collection and Analysis Techniques

To get data that is truly accurate, relevant, and valid that supports system development, the authors collect data sources by (1) Interviews, namely data collection through direct interviews with information sources in order to obtain more detailed data related to data. -data needed, (2) Observation, namely data collection through direct observation of the object of research by reviewing carefully and thoroughly the object of research and (3) literature study, namely the method of data collection is done by studying books related to the object. which is being researched. This literature research is theoretically very helpful in writing this research.

3. Design Results

3.1 System planning

The Design of the Medical Record Application System at the Harapan Pratama Clinic with the City of Tegal consists of use case diagrams, sequence diagrams, activity diagrams, class diagrams.

Table 1.
Actor Identification

No.	Actor	Use Case Name	Description
1.	Administrator	Login	Use cases describe the activity of entering a username and password to access the system.
2.	Administrator	Sign out	Use cases describe exit from the system
3.	Administrator	Management of patient data, drug data, doctor data and user data.	Use cases enter patient data, drug data, doctor data and user data.
4.	Administrator	Medical record management	Use cases describe the activities of carrying out the medical record process.
5.	Administrator	Print patient visit reports	Use cases describe printed patient visit reports.
6.	Doctor	Report management	Use cases describe the activity of viewing patient visit reports.
7.	Patient	Medical Record Data	Use cases describe data checking activities

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The use case of the Medical Record application at the Tegal City Health Service is as follows:

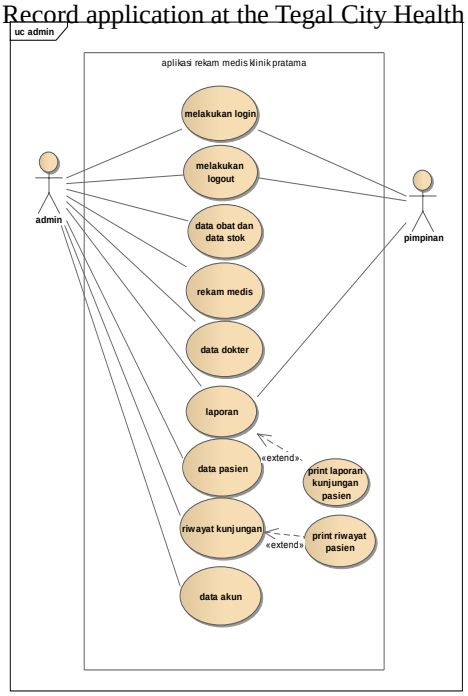

Fig 2. Use case diagram of Medical Record Application

3.2 Database Design

The database structure design was made in order to provide complete information about the column type and character length (length / values), so that the database structure needed to make the Tegal City Health Service Medical Record Information System can be found.

Table 2.
doctor table

Field	**Type**	**Size**	**Information**
Nama_Dokter	*varchar*	80	-
Specialist	*varchar*	15	-
Address	Text		-
No_Tellp	*varchar*	20	-

Table 3.
Patient table database

Field	**Type**	**Size**	**Information**
Identity number	*varchar*	30	-
Name	*varchar*	50	-
Jk	*varchar*	10	-
Address	*varchar*	100	-
Phone number	*varchar*	30	-

Table 4.
Puskesmas table database

Field	**Type**	**Size**	**Information**
Nama_Puskesmas	*varchar*	50	-
Building	*varchar*	50	-

Table 5.
Medical record table database

Field	**Type**	**Size**	**Information**
Patient_ID	*varchar*	50	-
Complaint	Text	-	-
Id_Dokter	*varchar*	50	-
Diagnosis	Text	-	-
Id_Polliclinic	*varchar*	50	-
Check_Date	Date	-	-

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Table 6.
Drug record table database

Field	**Type**	**Size**	**Information**
Id_Medical Record	*varchar*	50	-
Medicine name	*varchar*	50	-
Date_Priksa	Date	-	-

Table 7.
User table database

Field	**Type**	**Size**	**Information**
Username	*varchar*	30	-
Password	*varchar*	70	-
User_Name	*varchar*	30	-
Id_Level	Int	10	-

3.3 System implementation

The interface display of this system describes the actual design of the Medical Record Application in the Tegal city health service, in this display there are several pages, namely:

a) Login Page Views

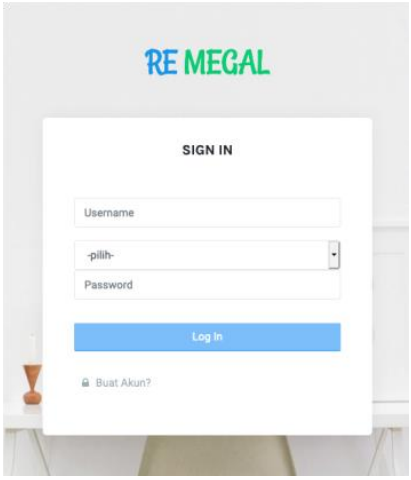

Fig 3. Login Page Views

b) Register Page Display

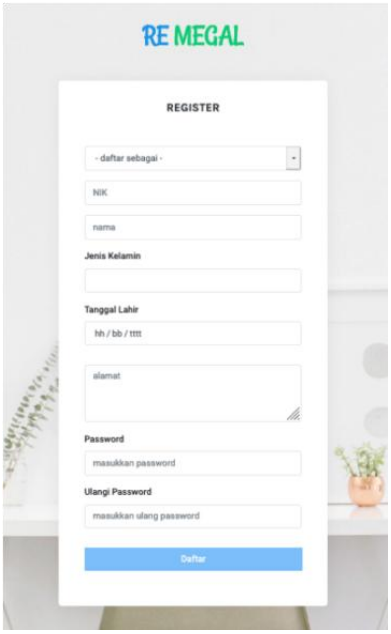

Fig 4. Register Page Display

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c) Display Password page

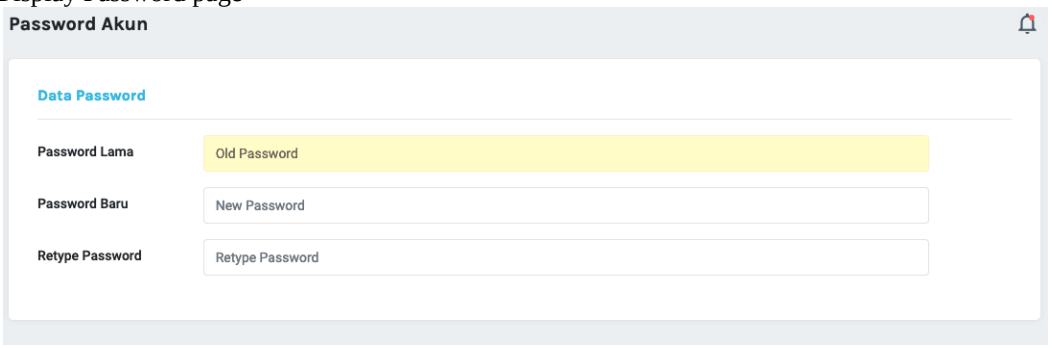

Fig 5. Password Page Display

d) Admin Menu Page Views

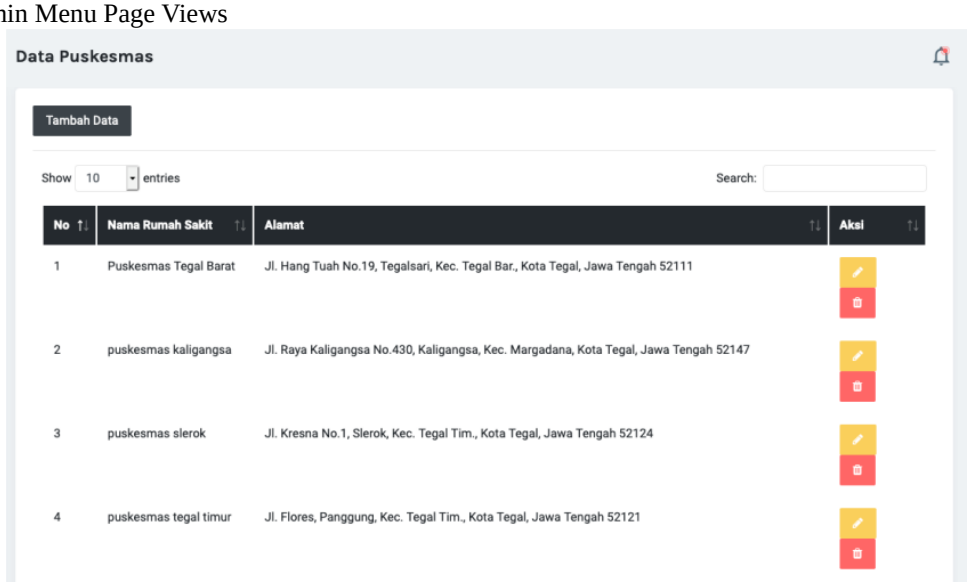

Fig 6. Admin Menu Page Views

e) Display Doctor Page Menu

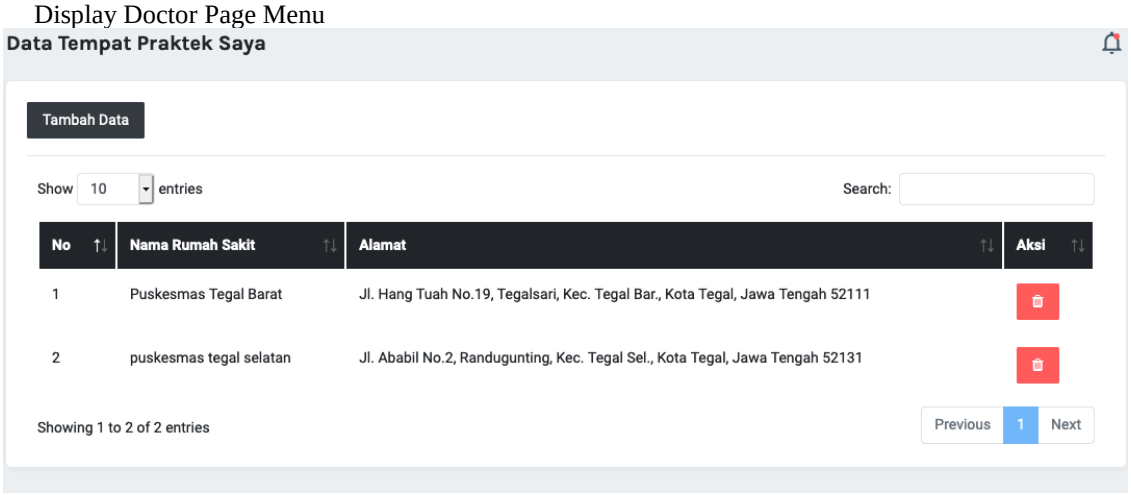

Fig 7. Doctor Menu Page Views

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f) Patient Page Menu Display

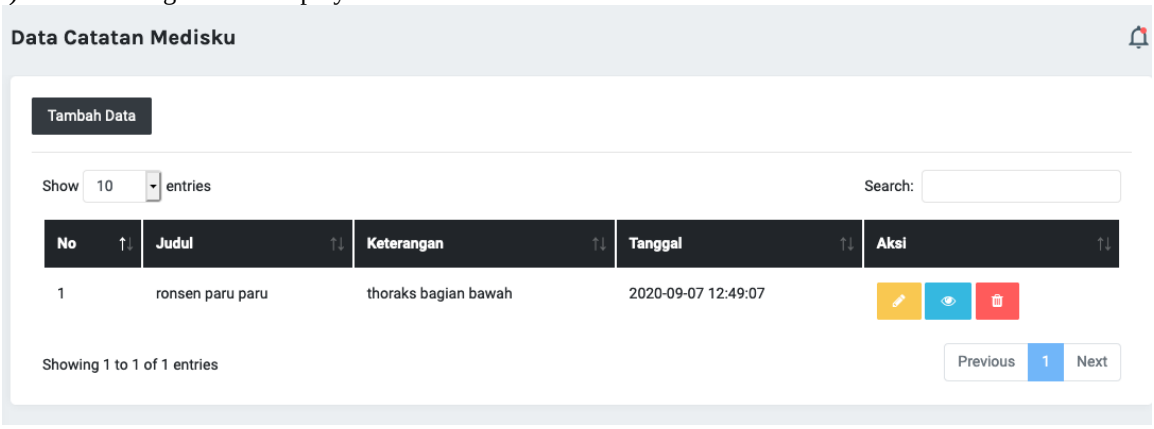

Fig 8. Doctor Menu Page Views

3.4 Test result

After the program is created, the next step is to implement the new system, to get the system in line with expectations, a system implementation plan is made starting from program testing, training, change over and maintenance.

a) Testing Program

After the program is created, testing of this application is required to find out whether the program is running according to the needs of the Harapan Harapan Pharmacies & Clinics. The testing is carried out such as inputting, editing, deleting and searching for drug data, patient data, doctor data, medical records, users, and view and print history of patient visits. During testing, there was an error or not. At the time of testing, each step needs to be noted so that it can make it easier to repair the system and make it easier to create a module for operating the medical record application at the Tegal City Health Service and make a solution to the problem.

b) Training Program

After the program is tested, the next step is the training program, the training is intended so that administrators / officers can use this application according to the procedure, this training activity is carried out until the officer understands the steps for using this medical record application.

c) Change over

Change over is a migration activity from the old system to the new system, because the old system is no longer effective and efficient. The method used in moving this system uses the parallel changeover method, namely the old system and the new system are run simultaneously for some time. After confirming there are no errors, the tested system is ready for use or system replacement is carried out and so on until all system applications can be used.

d) Care

Maintenance is an activity to maintain and maintain the system so that the system is protected from damage and always has maximum performance in operation. Maintenance should be carried out once a month to check the equipment used, even though there is no damage, it is better to do routine maintenance.

4. Conclusion

By making the medical record application, it can simplify the performance of health center staff and doctors, as well as a more effective and efficient system and NIK data that has been integrated with the online system.

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