Designing and Manufacturing Application of Electronic Medical Record for Clinic Dental in Health

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ABSTRACT

The development of information technology (IT) in the health sector is very rapid. Electronic medical record is the result of the development of these technologies trends in health services globally. Specifically medical records for dental clinic are different or more complex than medical records for other clinic. In accordance with the National Standard for Dental Medical Records and must comply with Permenkes Republik Indonesia number of 269 at 2008 concerning medical records and Law Number of 29 at 2004 regarding Medical Practice / Dentistry . Medical records of dental cases use clinical odontograms and approval of actions if necessary. Dental poly medical record officers are still having difficulty in data management process of special polygigi outpatient healthcare care because they are still manual, whereas medical records in the dental clinic complex with its odontogram require an electronic medical record application. This study aims to make the application of electronic medical records in health services based on national standards of dental medical records in which can scan and store patient odontogram data electronically. The making of this electronic medical record application uses the programming language Micrososft Visual Foxpro 9.0 using the SDLC method, while the data collection method uses interviews, observation, documentation and brainstorming. The output of this research is a software product or application of clinic dental electronic medical records in Health Services.

Keywords: *Application, Electronic Medical Record, Dental Clinic, Odontogram*

I. INTRODUCTION

Medical Record is a file that contains records and documents about the patient's identity, examination, treatment, actions and other services that have been provided to patients. Every health service is required to make a medical record both manual medical records and electronic medical records. With the increasing complexity of patient data, manual medic records need to be improved to be electronic so as to facilitate and speed up the work process carried out by health workers in inputting, storing and processing data accurately and safely. The application of electronic medical records is very much needed by various health service facilities especially poly Dental Medical Records whose data and information are more complex. Making a medical record is a dentist's obligation to provide dental health services to patients. This is stated in Permenkes No. 269/Menkes/Per/III/2008 concerning medical records, every doctor or dentist in carrying out medical practice must make a medical record. In making medical records, especially in the service of dentistry, hospitals and other health service facilities, especially the Dental and Oral Hospital of Jember University, it must be based on the National Medical Records Medical Standards.

Based on the 2014 Dental Medical Record Guide which is a refinement of the 2004 National

Dental Medical Records Guidelines, the dental medical record is divided into 4 main parts, namely: patient identity, odontogram, treatment table, and attachments / attachments: photo x-ray, laboratory results, informed consent or consent measures. However, in reality there are still many primary and secondary health care facilities that have not been guided by the Naional Medical Record Medical Standards, this can be seen from the incompleteness of the dental medical record file which includes patient identity, odontogram, treatment table, and complementary / supporting attachments.

Base on the Minister of Health Regulation No.269 of 2008 concerning Medical Records, Odontograms are included in the dental medical record standards. An odontogram is a check of the whole condition of the patient's teeth and mouth which is done and recorded at the first visit or the first opportunity so that it gives a picture of the overall state of the tooth.

Thus, all dental health service facilities especially the Dental and Oral Hospital are required to make a medical record that refers to the 2014 Dental Medical Guidelines [6]. This standard was made in view of the importance of the existence of dental data for each individual, because from experience during a mass disaster, it turns out the role of the dentist is very important in identifying dead victims. Various information can be obtained from the teeth including age, race, sex, blood type, characteristics, and the face / facial expression of the victim.

Based on preliminary studies that have been conducted through interviews with medical record officers at the Jember University Dental and Mouth Hospital and observations, that dental medical records made are not in accordance with the National Medical Records Medical Standards and nearly half of the odontogram data that has not been updated.

The purpose of this research is to design and create an application of dental poly electronic medical records with a case study at the Dental and Oral Hospital of Jember University, in which contains data on dental medical records based on national standards of dental medical records and anatomically record teeth through odontograms. This research needs to be done so that in making dental medical records have uniformity and consistency in filling dental medical records. So that the patient's medical record can be recorded in a saved scan and can be seen again completely and easily at any time, for example for identification, the required data can be used immediately and can simplify and speed up the identification process.

II. METHOD

The research method used is the Waterfall system development method from Sommerville [14]. While the data collection method in this study uses the interview, observation, documentation and focus group discussion (FGD) methods.
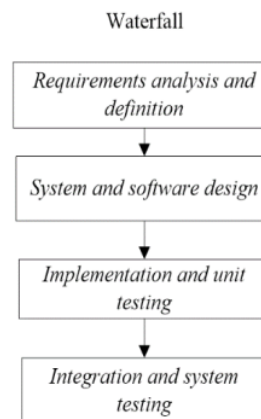
Waterfall

Waterfall system development method

III. RESULTS AND DISCUSSION

Requirements analysis and definition Based on the results of the FGD and the interview above, the medical record condition of the Dental and Oral Hospital of Jember University still uses the old standard, some items are still missing and need to be added, and many odontograms are not filled and updated. Whereas all dental and oral health service facilities including the Dental and Mouth Hospital of Jember University must be based on the national standard medical records Dentistry Medical Record Guide [6], and meet the Minister of Health Regulation 269 of 2008 on Medical Records, odontograms are included in the medical record medical standards teeth so it is mandatory to record means that it must be filled and updated.

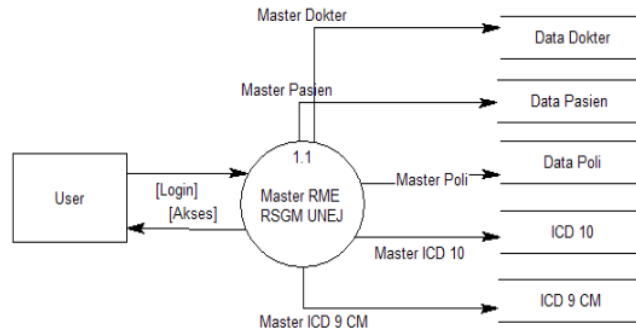**Flowchart System of Electronic Medical Record Dental Clinic**

Flowchart **Rekam Medik Elektronik Rumah Sakit Gigi dan Mulut Universitas Jember**
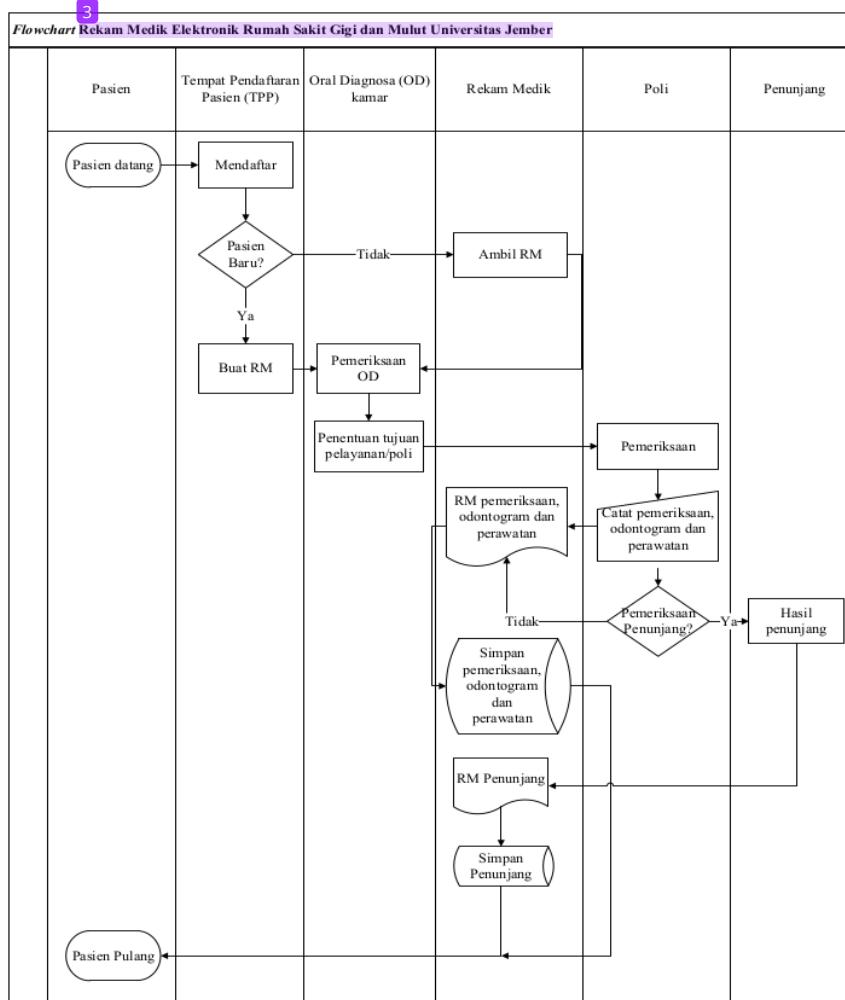
Context Diagram
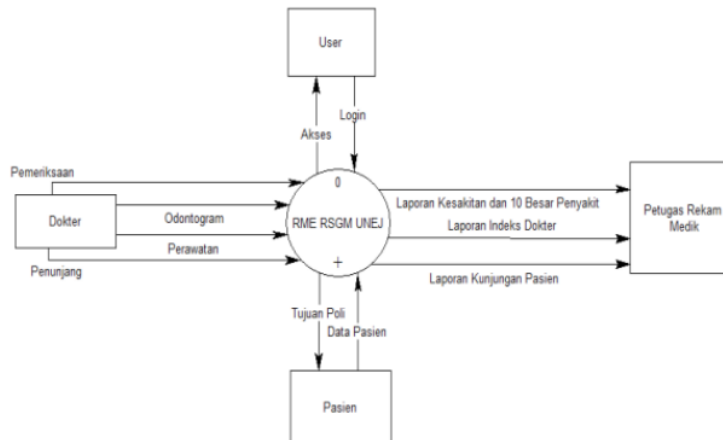
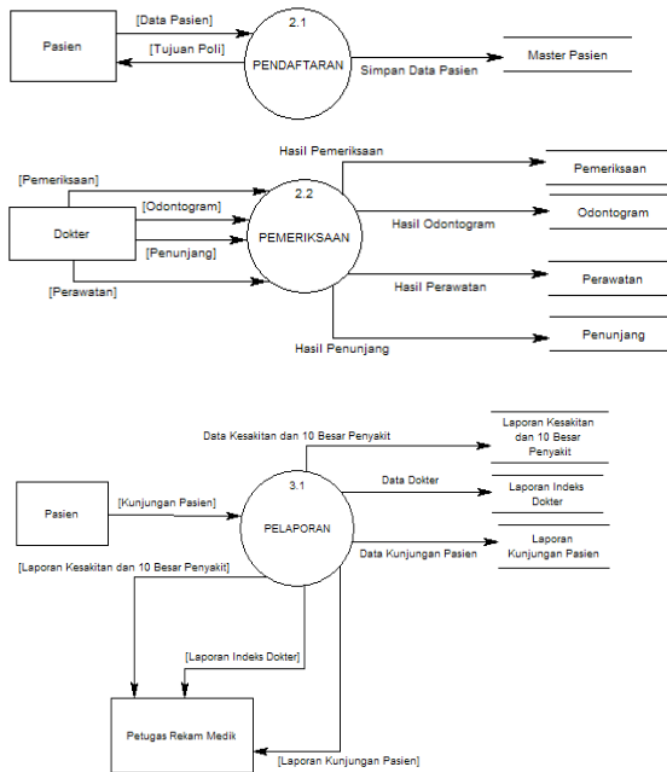## Data Flow Diagram (DFD) Level 1
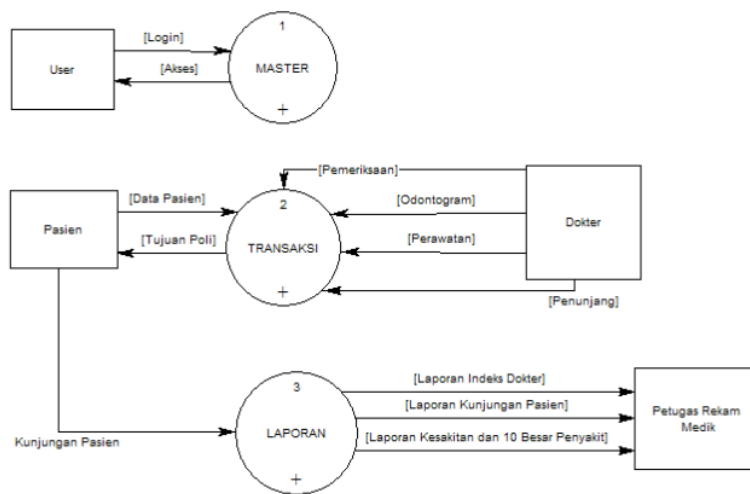
Data Flow Diagram (DFD) Level 2

Master Process

Transaction Process

Implementation and unit testing

At this stage the process of translating the design that has been made using Microsoft Visual Foxpro 9.0 is carried out. The database used has become one in Microsoft Visual Foxpro 9.0. The design results must be changed into the Microsoft Visual Foxpro 9.0 programming language [9] to be implemented as a system as needed.

A. Login View

B. Display of Menu

C. Display of Data Inspection

D. Display of Data Odontogram

E. Display of Visit History

Integration and system testing

This stage is the stage of system integration and testing, which means testing of interconnected program units (integrated). Testing is an important part in the development of a software. The purpose of testing is to find errors in the system and ensure the system is built in accordance with the expected results. Electronic medical record testing at the Dental and Mouth Hospital of Jember University uses the black box testing technique.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

From the results and discussion of the study it can be concluded as follows:

a. Medical poly electronic medical record Hospital is needed for faster and more accurate health services

b. The design used in designing electronic medical records for dental clinics in the hospital uses system flowcharts, context diagrams, data flow diagrams (DFD) and databases

c. The programming language used in making electronic medical records at Poly Dental Hospital is the Microsoft Visual Foxpro 9.0 programming language.

d. Tests carried out at the Dental and Oral Hospital of Jember University used black box testing techniques. The test results are in accordance with the needs of the Dental and Oral Hospital of Jember University, meaning that the system is successful and there are no errors.

B. Recommendations

The suggestions in the study are:

a. The application can be added automatic warning system in the context of patient savety.

b. This application can be developed based on web, android or iphone.

c. Part of the dental medical record that is odontogram can be developed using dental image photographs.

d. All service processes at the UNEJ RSGM are computer-based so as to facilitate access to information for health service users, health workers and students of the Faculty of Dentistry, University of Jember both in the interests of medicine, education, and research.

V. REFERENCES

[1] Adiputra, M. S, 2012, Perancangan Sistem Informasi Rekam Medis Pasien Elektronik Terpusat Studi Kasus: Kota Madya Denpasar, Surabaya: STMIK STIKOM Surabaya. Retrieved from http://repository.stikom.ac.id

[2] Aflan, F, 2012, Analisis dan Perancangan Sistem Informasi Rekam Medis pada Rumah Sakit Islam Siti Khodijah Kebumen. Yogyakarta: STMIK AMIKOM. Retrieved from http://repository.amikom.ac.id

[3] Ayuliana, 2009, Testing dan Implementasi, Jakarta: 1–6. Retrieved from rifiana.staff.gunadarma.ac.id

[4] Djaelani, 2013, Teknik Pengumpulan Data dalam Penelitian Kualitatif, Semarang: FPTK IKIP Veteran Semarang

[5] Nugroho, Ekawati, 2014, Pengenalan Dasar Perancangan, Desain dan Pembuatan Sistem Informasi Rekam Medis Pada Klinik Rawat

Jalan. (A. M@ftuhin, Ed.) (1st ed.). Jakarta: CV. Trans Info Media

[6] Panduan Rekam Medik Kedokteran Gigi, 2014, In Kementerian Kesehatan RI

[7] Peraturan Menteri Kesehatan Republik Indonesia No. 1173 tahun 2004 Tentang Rumah Sakit Gigi dan Mulut

[8] Peraturan Menteri Kesehatan Republik Indonesia No. 269 tahun 2008 Tentang Rekam Medis

[9] Priyanti, E, 2010, Visual FoxPro 1–25

[10] Ridwan, 2013, Analisis dan Perancangan Basis Data Relasional pada Puskesmas Muara Emburung Muara Enim, Palembang: Universitas Bina Darma

[11] Rustiyanto, E, 2011, Sistem Informasi Manajemen Rumah Sakit yang Terintegrasi (1st ed.). Yogyakarta: Gosyen Publishing.

[12] Santoso, 2012, Analisis dan Perancangan Sistem Informasi Rekam Medis di RSKIA Bhakti Ibu. Yogyakarta: STMIK AMIKOM, 1–17. Retrieved from http://repository. amikom.ac.id

[13] Saputra, E, 2011, Perancangan Sistem Informasi Rekam Medis Berbasis Borland Delphi 7 di Badan Layanan Umum Daerah Rumah Sakit Ratu Zalecha Martapura. Banjar Baru: STIKES Husada Borneo, 1–138. Retrieved from https://perpustakaanhb.files. wordpress.com

[14] Sommerville, I, 2011, Sofware Engineering 9. (M. Horton, Ed.) (9th ed.). America: Pearson

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