

FECT\_OF\_THE\_USE\_OF\_ELECTR  
ONIC\_DENTISTRY\_MEDICAL\_RE  
CORDS\_ON\_D.pdf  
*by*

---

**Submission date:** 30-Jun-2022 01:49PM (UTC+0700)

**Submission ID:** 1864915277

**File name:** FECT\_OF\_THE\_USE\_OF\_ELECTRONIC\_DENTISTRY\_MEDICAL\_RECORDS\_ON\_D.pdf (133.56K)

**Word count:** 3101

**Character count:** 16019

# THE EFFECT OF THE USE OF ELECTRONIC DENTISTRY MEDICAL RECORDS ON DENTAL POLY SERVICES IN KALUKU BODOA PUBLIC HEALTH CENTER , MAKASSAR

Gemella Nur Illahi<sup>1</sup>, Fuad Husain Akbar<sup>2</sup>, Ayub Irmadani Anwar<sup>2</sup>,  
Burhanuddin Dg. Pasiga<sup>2</sup>, Rasmidar Samad<sup>2</sup>, Hasanuddin Thahir<sup>3</sup>,  
Susilowati<sup>4</sup>

<sup>1</sup> Master of Dental Science, Faculty of Dentistry, Hasanuddin University, Indonesia

<sup>2</sup> Department of Dental Public Health Department, Faculty of Dentistry, Hasanuddin University, Indonesia

<sup>3</sup> Department of Periodontic Department, Faculty of Dentistry, Hasanuddin University, Indonesia

<sup>4</sup> Department of Orthodontic Department, Faculty of Dentistry, Hasanuddin University, Indonesia

Corresponding Author: Gemella Nur Illahi,<sup>1</sup> Master of Dental Science, Faculty of Dentistry, Hasanuddin University, Indonesia. Email: [gemella2313@gmail.com](mailto:gemella2313@gmail.com)

## ABSTRACT

**Background:** Health services at the Public Health Center still have shortcomings, both in terms of data management due to a large amount of data so that there is repetition in recording, besides that there is also the occurrence of human error in the form of fatigue and slow service provided by employees, which is caused by an imbalance between the number of available human resources with the number of patient visits who come to the Public Health Center.

**Objective:** To see whether or not the use of electronic dental medical records has an effect on dental poly services at the Kaluku Bodoa Public Health Center.

**Methods:** This type of research uses observational quantitative research methods. The research time is 6 working days, from Monday to Saturday on 7-12 March 2022 from 08.00-11.00 WITA. the number of samples obtained in 6 days as many as 36 samples.

**Results:** The median value of time for filling in dental medical records for new patients manually and electronically (n=14), is 2 minutes 10 seconds and 2 minutes 8 seconds with a p-value = 0.662, while the median value for filling out dental medical records for old patients manually and electronics (n=22), which is 2 minutes 2 seconds and 43 seconds, with p-value = 0.15.

**Conclusion:** There is a visible skill of health workers operating this electronic medical record system, although there are no significant results between manual or paper medical records. The main benefit of transitioning to electronic medical

records is the integrity of patient records, which can support the implementation of clinical decisions and improve patient safety.

Keywords: electronic medical record, service time, dental medical record

## **INTRODUCTION**

The current health information system in Indonesia is still far from the ideal condition as expected. Various problems are still encountered in the implementation of the health information system, such as data and information management activities that have not been integrated and coordinated in a good mechanism, there is overlap in the collection and processing of health data, and there is still data collection that is carried out repeatedly by different units. It is not impossible for duplication of activities and duplication of data. Therefore, it is difficult for stakeholders and policymakers, such as the Head of Public Health Center, Head of Hospital, Health Office, and officials in the Ministry of Health to be able to make decisions about project planning to support healthy development.<sup>1,2</sup>

Public Health Center is one of the public service facilities that are easily found in big cities and in every corner of the sub-district today. In its implementation, they are competing to improve the quality of service to get patients according to the previously targeted. The quality of service that must be improved in this case is not only from the aspect of medical services, but in the non-medical aspect, they are also competing to provide the best to customers (patients). The non-medical aspects in question can be in the form of the friendliness of officers, comfort, security, speed, accuracy, and accuracy of the services provided.<sup>3,4</sup>

Health Services at the Public Health Center, still have shortcomings, both in terms of data management due to the large enough amount of data so that there is repetition in recording, besides that there is also the human error in the form of fatigue and slow service provided by employees, which is caused by an imbalance between the number of human resources available by the <sup>3</sup> number of patient visits who come to the Public Health Center.<sup>2</sup>

Medical records according to Permenkes No. 269 of 2008 Article 1 <sup>9</sup> is a file containing notes or documents regarding examinations, treatment, actions, and other services provided to patients during the treatment period, while Article 2 paragraph (1) explains that medical records must be made in writing, complete and clear or electronically and in paragraph (2) <sup>2</sup> states that the administration of medical records using electronic information technology shall be further regulated by separate regulations.<sup>5</sup>

<sup>8</sup> In the Regulation of the Minister of Health Number 749a of 1989, it is stated that every health service facility is obliged to maintain medical records. Medical Records have a goal to support the achievement of an administrative order in the context of efforts to improve health services.<sup>6</sup>

The transition from conventional medical records (paper-based) to electronic medical records (digital/ paperless) is a big challenge for some health care agencies but is the most important thing to minimize errors.<sup>7</sup>

The use of electronic media in the management of medical records is known as <sup>3</sup> an electronic medical record system. (RME). RME is a transition from conventional medical records (using paper) to digital medical records (paperless) which contain

interpretations made by doctors or other health workers in order to diagnose and treat patients. The use of electronic medical records is considered to have many benefits, namely in the system of entry, storage, management, distribution, and document maintenance.<sup>8,9</sup>

The manual dental medical record system that has been implemented at the Public Health Center has many limitations resulting in a lack of efficiency in providing fast service and processing data into required information,<sup>13</sup> so it is necessary to create an electronic medical record information system. The results of the analysis of the medical record system are expected to help health workers at the Public Health Center<sup>7</sup> so that they can improve service quality, professionalism, resources, and cost-efficiency.

The general medical record system at the Kaluku Bodoa Public Health Center<sup>7</sup> still uses paper (manuals) which are arranged in a folder and grouped by the family head or also known as a family folder located in the working area of the Public Health Center.<sup>16</sup> The management of medical records is used by the Public Health Center because there are many people who seek treatment or just to check the health of each region and can be used for decision making on health management in the area, both by the Public Health Center and the Makassar City Health Office.

Based on a preliminary study conducted on March 1, 2022, at the Kaluku Bodoa Public Health Center, it was found that the number of officers assigned to the medical record room, namely only 1 permanent employee and 1 intern, with a total of 20 – 30 patient visits per day, causing the search and distribution of the patient's medical record status to the destination poly can take more than 10-15 minutes per

5-10 medical records. This of course will lead to less efficiency in serving patients. Then, filling in dental medical records is still not completely complete, starting from general health status to odontogram sheets that are not filled out properly, so that it can lead to the less-than-optimal data processing to become information needed in the future.

Based on the findings from the preliminary study <sup>11</sup> above, the researcher is interested in conducting research on the Effect of the Use of Electronic Dental Medical Records on Dental Poly Services at the Kaluku Bodoa Public Health Center Makassar.

## **RESEARCH METHODS**

This type of research uses observational quantitative research methods. The purpose of this study was to see whether or not the use of electronic dental medical records had an effect on dental poly services for 6 working days, from Monday to Saturday on March 7 – 12 2022 from 08.00 – 11.00 WITA. The number of samples obtained in 6 days was 36 samples. The time for filling in the manual and electronic dental medical records is calculated from the time the dentist starts taking the patient's history until the prescription is given.

The instruments used in this research are:

1. Stopwatch

To calculate the time for filling out manual dental medical records with electronics.

2. Observation sheet

Sheets are provided to find out the results of observations on the length of time for filling in manual and electronic dental medical records

### 3. Electronic dental medical record

Web-based dental medical records are used as a comparative tool in research

The data obtained will be presented in the form of a comparison of the filling time between manual dental medical records and electronic dental medical records.

## RESULTS AND DISCUSSION

### A. Research Results

**Table 1. Distribution of Frequency of Dental Patient Visits at the Dental Poly of Kaluku Bodoa Public Health Center for 6 Working Days**

No.	Day	Number of Dental Patient Visits	Dental Patient Type	
			New	Old
1	Monday	3	0	3
2	Tuesday	8	0	8
3	Wednesday	7	1	6
4	Thursday	7	6	1
5	Friday	9	5	4
6	Saturday	2	2	0
<b>Total</b>		<b>36</b>	<b>14</b>	<b>22</b>

Based on Table 1, the results showed that patients who went to the dental clinic on Monday, as many as 3 people who were old patients or patients who had visited before, patients who went to the dental polyclinic on Tuesday, and as many as 8 old patients, patients who went to the dental clinic on Wednesday, as many as 7 people, consisting of 1 new patient, and 6 old patients, patients who went to the dental clinic

on Thursday, as many as 7 people, consisting of 6 new patients, and 1 old patient, patients who went to the dental clinic on Friday, as many as 9 people, consisting of 5 new patients, and 4 old patients, patients who went to the dental clinic on Saturday, as many as 2 people, consisting of 2 new patients. Total visits for 1 week were 36 patients, consisting of 14 new patients and 22 old patients.

**Table 2. Time to Fill in the Dental Medical Records of New Patients Manually and Electronically**

No.	Day	Frequency of New Patients	Charging Time		<i>p</i> *
			Manual	Electronic	
1.	Monday	0	0	0	
2.	Tuesday	0	0	0	
3.	Wednesday	1	55 seconds	51 seconds	
4.	Thursday	6	54 seconds	86 seconds	
			104 seconds	102 seconds	
			60 seconds	87 seconds	
			87 seconds	92 seconds	
			59 seconds	100 seconds	0.662 *
			103 seconds	91 seconds	
5.	Friday	5	89 seconds	46 seconds	
			102 seconds	104 seconds	
			92 seconds	102 seconds	
			91 seconds	50 seconds	
			90 seconds	60 seconds	
6.	Saturday	2	44 seconds	46 seconds	
			153 seconds	90 seconds	
<b>Total</b>		<b>14</b>			
<b>Maximum Value</b>			<b>153 seconds</b>	<b>104 seconds</b>	
<b>Minimum Value</b>			<b>44 seconds</b>	<b>46 seconds</b>	
<b>Median Value</b>			<b>130 seconds</b>	<b>128 seconds</b>	

\**p* value significance <0.005

Based on table 2, the results of observations for 6 working days were obtained from as many as 14 new patients who visited the Dental Poly. The maximum value of time filling in the manual medical record is 153 seconds, and the minimum value is

44 seconds while the maximum value for filling out the electronic medical record is 104 seconds. And the minimum value is 46 seconds. The median value for filling out dental medical records manually is 130 seconds while the median value for filling out medical records electronically is 128 seconds. When compared filling in dental medical records both manually and electronically, there was no significant difference between the two, with a p-value of 0.662.

**Table 3. Time to Fill in Old Patient Dental Medical Records Manually and Electronically**

No.	Day	Dental Patient Frequency	Charging Time		p *
			Manual	Electronic	
1.	Monday	3	60 seconds	43 seconds	0.15 *
			80 seconds	98 seconds	
			73 seconds	50 seconds	
2.	Tuesday	8	80 seconds	36 seconds	
			107 seconds	58 seconds	
			83 seconds	40 seconds	
			94 seconds	37 seconds	
			105 seconds	55 seconds	
			82 seconds	43 seconds	
3.	Wednesday	6	107 seconds	36 seconds	
			99 seconds	58 seconds	
			27 seconds	36 seconds	
			125 seconds	58 seconds	
			45 seconds	40 seconds	
			60 seconds	37 seconds	
4.	Thursday	1	90 seconds	55 seconds	
			121 seconds	43 seconds	
5.	Friday	4	60 seconds	30 seconds	
			60 seconds	39 seconds	
			83 seconds	83 seconds	
			82 seconds	70 seconds	
6.	Saturday	0	70 seconds	105 seconds	
			0	0	
<b>Total</b>		<b>22</b>			

<b>Maximum Value</b>	<b>125 seconds</b>	<b>105 seconds</b>
<b>Minimum Value</b>	<b>27 seconds</b>	<b>30 seconds</b>
<b>Median Value</b>	<b>122 seconds</b>	<b>43 seconds</b>

\**p* value significance <0.005

Based on table 3, the results of observations for 6 working days were obtained from as many as 22 old patients who visited the Dental Poly. The maximum value of time filling in the manual medical record is 125 seconds, and the minimum value is 27 seconds while the maximum value for filling out the electronic medical record is 105 seconds. And the minimum value is for 30 seconds. The median value of filling out dental medical records manually is 122 seconds while the median value of filling out medical records electronically is 43. When compared to filling in dental medical records both manually and electronically, there is no significant difference between the two, with *p*-value of 0.15.

## **B. Discussion**

Based on tables 2 and 3, it can be concluded that the time for filling in dental medical records for new and old patients manually or electronically looks faster than usual. The median time for filling in dental medical records for new patients manually is 130 seconds and electronically is 128 seconds, while filling out dental medical records for old patients manually is 122 seconds and electronically is 43 seconds. This is because there are several medical records that are not filled out completely, both on the patient's general condition sheet and the odontogram sheet so the medical record is filled only in the anamnesis section, and the treatment plan will be given. To the research conducted by Erwantini, et al, (2013), doctors need about 10 minutes to fill out a manual medical record and about 12 minutes to fill out an electronic medical record.<sup>10</sup> Factors that cause dentists to not be able to

complete medical records, namely the limited-service time with many patients queuing at the Dental Poly. The results of this study are in line with the research of Pamungkas et al., (2010), which showed that the incomplete filling of medical record files at PKU Muhammadiyah Yogyakarta Hospital was caused by a very limited time, so doctors did not have time to fill out medical record files completely.<sup>11</sup>

Based on table 2, the minimum value for filling out medical records for new patients electronically is 46 seconds, while the minimum value for filling out medical records manually is 44 seconds. This is because officers are still not used to recording electronically. This is in line with research conducted by Pizziferri L et al (2013), that by adopting electronic medical records, doctors or health workers take longer to provide health services to patients than when using paper medical records.<sup>12</sup>

## CONCLUSIONS AND SUGGESTIONS

Although the application of electronic medical records is only for 6 working days, the skills of health workers in operating this electronic medical record system are visible, although there are no significant results between manual or paper medical records. The main benefit of transitioning to electronic medical records is the integrity of patient records, which can support the implementation of clinical decisions and improve patient safety.

Further research is needed in analyzing the benefits of implementing electronic medical records, not only for doctors and dentists but also for health workers who work in the Public Health Center as a whole. Starting from measuring

the benefits of the aspect of file storage, as well as aspects of administrative costs from the application of this electronic medical record when compared to manual medical records (paper) and being able to assess the psychological aspects of the medical record officer on duty. The researcher hopes that this further research can improve all the shortcomings of this research by future researchers.

#### **BIBLIOGRAPHY**

1. Ministry of Health. Regulation of the Minister of Health of the Republic of Indonesia Number 97 of 2015 concerning the Roadmap of the 2015-2019 Health Information System. Health Information System Roadmap 2015 - 2019 [Internet]. 2015;1-76. Available from: <http://www.pusdatin.kemkes.go.id/resources/download/pusdatin/lain-lain/PMK-No-97-Th-2015-ttg-Peta-Jalan-Sistem-Informasi-Kesehatan-Tahun-2015-2019.pdf>
2. Damayanti DS, Rusmin M, Arranury Z. Overview of the Implementation of a WEB-Based Health Management Information System at the Makassar City Health Center 2015. *Al-Sihah Public Heal Sci J*. 2015;7(2):193-202.
3. Sholihati I, Handayani D, Nusyirwan MS. PERCEPTION OF PATIENT SATISFACTION ON QUALITY OF SERVICE AT THE DENTAL AND MOUTH HOSPITAL, MUHAMMADIYAH UNIVERSITY, YOGYAKARTA. 2013;
4. Sharfina D. Hospital Accreditation As Quality Assurance of Patient Safety Services in Hospitals. 2019;
5. Ministry of Health. MINISTER OF HEALTH OF THE REPUBLIC OF INDONESIA NUMBER: 129/Menkes/SK/II/2008 CONCERNING Minimum Service Standards for Hospitals [Internet]. 2008 p. 11. Available from: [https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/MT\\_Globalization\\_Report\\_2018.pdf](https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/MT_Globalization_Report_2018.pdf)[http://eprints.lse.ac.uk/43447/1/India\\_globalisation%2C\\_society\\_and\\_inequalities%28Isero%29.pdf](http://eprints.lse.ac.uk/43447/1/India_globalisation%2C_society_and_inequalities%28Isero%29.pdf)<https://www.quora.com/What-is-the>
6. Ministry of Health. Regulation of the Minister of Health of the Republic of Indonesia No. 749a/Menkes/PER/XII/1989 [Internet]. 1989 p. 99-104. Available from: <https://www.unhcr.org/publications/manuals/4d9352319/unhcr-protection->

training-manual-european-border-entry-officials-2-legal.html?query=excom 1989

7. Skolnik NS. *Electronic Medical Records A Practical Guide for Primary Care*. Humana Press. London; 2011. 167 p.
8. Wahyudi, Lazuardi L, Hasanbasri M. Efficiency of Basic Health Services in Pematang Regency using Data Envelopment Analysis. *J Indonesian Health Policy*. 2015;04(01):19–25.
9. Aguirre RR, Suarez O, Fuentes M, Sanchez-Gonzalez MA. Electronic Health Record Implementation: A Review of Resources and Tools. *Cureus*. 2019;11(9).
10. Erwantini F, Nugroho E, Sanjaya GY, Hariyanto S. ELECTRONIC MEDICAL RECORDS: A STUDY OF BENEFITS IN THE CONTEXT OF BASIC HEALTH SERVICES. FIKI [Internet]. 2013; Available from: <https://core.ac.uk/download/pdf/295362162.pdf>
11. Pamungkas TW, Marwati T. Analysis of Incomplete Filling of Medical Record Files at PKU Muhammadiyah Hospital Yogyakarta. *J Health of the Univ Ahmad Dahlan*. 2010;17–28.
12. Pizziferri L, Kittler AF, Volk LA, Honor MM, Gupta S, Wang S, et al. Primary care physician time utilization before and after implementation of an electronic health record: A time-motion study. *J Biomed Inform*. 2005;38(3):176–88.

---

#### ORIGINALITY REPORT

---

9%

SIMILARITY INDEX

5%

INTERNET SOURCES

5%

PUBLICATIONS

4%

STUDENT PAPERS

---

#### PRIMARY SOURCES

---

1

Ayub Irmadani Anwar, Andi Zulkifli. "The influence of demonstration method education in the knowledge of tooth brushing in children

1%

Time on Patient Satisfaction at Baloi Permai  
Batam Puskesmas Year 2021", Proceeding  
International Conference on Medical Record,  
2022

Publication

---

8	Submitted to Udayana University Student Paper	1 %
9	Afrizal Vatikawa, Amnawaty Amnawaty. "Medical Record Data Counterfeiting by Doctors in Indonesia Reviewed from the Ethics, Discipline, and Legal Aspects", FIAT JUSTISIA:Jurnal Ilmu Hukum, 2018 Publication	<1 %
10	Submitted to University of Oxford Student Paper	<1 %
11	<a href="http://ojs.unm.ac.id">ojs.unm.ac.id</a> Internet Source	<1 %
12	<a href="http://research-faculty.haifa.ac.il">research-faculty.haifa.ac.il</a> Internet Source	<1 %
13	Iin Suwandari, Ratna Wardani. "An Analysis of the Online Registration System at Caruban Hospital in 2020", Journal for Quality in Public Health, 2021 Publication	<1 %
14	Sukiatun Sukiatun. "ANALYSIS CLAIM BPJS REVIEW FROM COMPLETENESS OF MEDICAL RECORD DOCUMENTS AND ACCURACY	<1 %

# DIAGNOSIS CODES IN RSUD. dr. ISKAK TULUNGAGUNG", JOURNAL FOR QUALITY IN PUBLIC HEALTH, 2018

Publication

---

15	<a href="http://www.ijstr.org">www.ijstr.org</a> Internet Source	<1 %
16	<a href="http://www.researchgate.net">www.researchgate.net</a> Internet Source	<1 %
17	<a href="http://proceeding.unikal.ac.id">proceeding.unikal.ac.id</a> Internet Source	<1 %

---

Exclude quotes  On

Exclude matches  < 5 words

Exclude bibliography  On