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(RESEARCH ARTICLE)



Prediction of active filing shelf in medical record unit - General hospital Dr. H. Soewondo Kendal 2020 – 2024

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Abstract

General hospital Dr. H. Soewondo Kendal is a local government hospital. Improving medical support services, especially the quality of medical record archiving services, is essential to maintain the quality of hospitals in the context of good hospital standards. This study aims to predict the need for archive shelves between 2015-2019. The type of research used is descriptive with accidental sampling technique. Patient medical records were collected using a systematic sampling technique. The observation results showed that the average thickness of medical record documents was 0.85 cm based on measurements on 30 samples of medical record documents. The hospital has 48 shelves with 5 sub-shelves on each shelf. The length of the available archives is 525 cm and by 2024 a total of 37 shelves will be needed. Modeling results based on linear regression equations have decreased medical record documents since 2015-2019 $y = -782.9x + 30636$. However, the linear regression validation for the cumulative medical record documents for 2015-2019 shows an increase based on the regression equation $y = 28439x + 1112.2$, therefore it is necessary to immediately save the medical record document in an active state. The conclusion delivered by Dr. H. Soewondo Kendal does not need an additional archive shelf, but it does require inactive document storage.

Keywords: Medical records unit; Prediction of shelf needs; Medic record documents; Inactive document; Retention of medical records

1. Introduction

Regulation of the Minister of Health (Permenkes) RI Number. 749a / Menkes / Per / XII /1989 states that every health service facility is required to have an outpatient and inpatient medical record unit. [1] A medical record is a file containing notes and documents about the patient's identity, examination results, medication that has been given, and other actions and services provided to patients [2].

Processing of medical record document data which is closely related to the process of filing medical record documents. [3] Filing is a unit in the medical records department that is responsible for the storage, retention, and destruction of medical record documents. The filing unit is tasked with providing complete medical record documents so that it can facilitate the tracking of patient information data if needed at any time [4].

Unit Filing is responsible for the storage of medical record documents. The speed of taking medical record documents in the filing section also affects the service to patients. Fast and precise service with the support of existing facilities in the filing section, such as the availability of storage shelves that are easily accessible by officers to make it easier to

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retrieve medical record documents, the availability of sufficient shelves for patient medical record documents stored in active medical record filing documents so that patients will serve quickly. [5]

The frequency of entry and exit and the increase in medical record documents makes it necessary to predict the availability of ideal storage shelves. Medical record documents that are stored on storage shelves are not always kept in a long storage time, the document shelf will be full and not sufficient anymore so that it needs document retention 5. If the filing space capacity is solid, it is necessary to sort the files that are already in the inactive category. Overcrowded shelves can complicate and slow down the process of storing and retrieving files, besides that, dense storage tends to be cluttered and damaged [6].

Based on the survey results at the general hospital Dr. H. Soewondo Kendal, the number of shelves owned by the public hospital is 68 shelves with each shelf having 5 sub-shelves with a centralized storage system, namely the storage of patient medical records in one place, both polyclinic visit records and notes while a patient is treated [7].

The numbering system used is the Unit Numbering System. This system only provides one medical record number for outpatients, inpatients, emergency patients, and newborns.

The medical record document structuring system uses the Digit Filing Terminal system, which is a system of synchronization by aligning medical record document folders based on the sequence of medical record numbers in the last two group numbers. (10) Archive Room in Dr. H. Soewondo Kendal has 3 floors for storing medical record documents. The 1st floor has tail number 5 7 9 for the 2nd floor there is tail number 0 1 3 and on the 3rd floor there is tail number 2 4 6 8. The filler shelf is available at Dr. H. Soewondo Kendal has not yet collected all medical record documents because there are still many medical record documents, especially inpatient forms that have not been put on the storage shelf. At the time of taking documents, officers had difficulty retrieving the documents because the storage shelves were too tight and not neatly arranged, especially on the 2nd floor archive shelf. H. Soewondo Kendal also has not retained medical record documents. General Hospital Dr. H. Soewondo Kendal every day has new patients who are influential with the need for shelves, so it is necessary to conduct research on "Prediction of Active Archives Shelf Medical Record Unit - Dr. H. Soewondo Kendal 2020 - 2024. The purpose of this study was to determine the prediction of the number of shelves needed in the filing unit of the General Hospital Dr. H. Soewondo Kendal in 2020 to 2024.

2. Methods

The type of research used is descriptive research with the method of observation [8]. The data collected in this study is to measure the dimensions of the document storage shelf including the length of the sub shelf, the width of the sub shelf and the height of the sub shelf. In addition, it also measures the dimensions of medical record documents which include the length, width and thickness of the document. The average thickness of medical record documents is based on measurements of 30 samples of medical record documents and the number of medical records from 2020 to 2024. When the research was carried out from August 2017 to October 2017. The place of research was carried out at the Filing Unit, medical records department, Dr. H. Soewondo Kendal. The population in this study was 30 samples of medical record documents and the number of medical record documents from 2020 to 2024, medical record file storage shelves totaling 48 shelves with 5 sub-shelves on each shelf and the available filing length was 525 cm, while the sample used is a medical record document filling unit.

Sampling Techniques, outpatient medical record document shelves were taken by accidental sampling, namely, sampling was done by taking data that happened to exist at the time of the study. Meanwhile, the patient's medical record files were taken using systematic sampling [9].

The research variables observed were the average patient visit, the average thickness of the medical record file, the number of medical record file storage shelves, the size of the medical record file storage shelf and the shrinkage of medical records [10].

3. Results and discussion

3.1. Shelf Dimensions

The General Hospital Dr. H. Soewondo Kendal has 2 types of shelves, namely iron shelves with a combination of wood and metal shelves (gray) with the total number of shelves is 48 and each shelf has 5 sub shelves.

Table 1 Dimensions of Filing Shelf 1 and 2

No.	Filing Shelf Dimensions	Shelf 1	Shelf 2
1.	Material	Iron shelf wood combination	Iron shelf (gray)
2.	Sub Shelf Length	105 cm	105 cm
3.	Sub Shelf Width	36 cm	36,5 cm
4.	Sub Shelf Height	40,5 cm	35 cm

3.2. Medical Record Documents

The measurement results of the patient's medical record documents, dimensions of medical record documents, namely length: 34.5 cm, width: 25.5 cm and the average thickness of medical record documents is 0.85 cm obtained from 30 samples of medical record documents from the total population: 141,437 documents medical records. The following is a table of the number of additional medical record documents [11].

Table 2 Addition of New Medical Record Documents for 2015 to 2019

Time	Medical Record Documents	%
2015	28.426	20,1%
2016	29.690	21,0%
2017	29.565	20,9%
2018	28.799	20,4%
2019	24.957	17,7%
Total	141.437	100%

Modeling results based on the linear regression equation, there is a decrease in medical record documents $y = -782,9x + 30636$

3.3. Retention

General Hospital Dr. H. Soewondo Kendal in 2015 to 2019, no retention was carried out due to constraints on the required costs. Arrangement of inactive medical record documents is calculated from at least the last 5 years from the date of the patient's last treatment. The goal is to reduce the burden of storing and storing assessment activities for the use of medical records for later preservation and destruction. [12].

Prediction of Number of Medical Record Documents for 2020 to 2024. In determining the prediction of the number of medical record documents from 2020 to 2024, it can be calculated by calculating the average number of additional medical record documents for new patients in the previous 5 years from 2015 to 2024.

Table 3 Scale Series Analysis

Time	Medical Record Document	X	XY	X ²
2015	28.426	2	- 56.852	4
2016	29.690	1	- 29.690	1
2017	29.565	0	-	0
2018	28.799	-1	28.799	1
2019	24.957	-2	49.914	4
Total	141.437	0	- 7.831	10

$$Y_n = a \pm b \cdot x$$

$$a = \frac{\sum Y}{n} = \frac{141437}{5} = 28287,4$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{-7831}{10} = -7831,1$$

$$Y_n = 28287,4 - 783,1 \cdot X$$

Table 4 Prediction of the Number of New Patient Visits in 2020 to 2024

Time	$Y_n = a \pm b \cdot x$	Result
2020	$Y = 28287,4 - 783,1 (3)$	25.938,1
2021	$Y = 28287,4 - 783,1 (4)$	25.155,0
2022	$Y = 28287,4 - 783,1 (5)$	24.371,9
2023	$Y = 28287,4 - 783,1 (6)$	23.588,8
2024	$Y = 28287,4 - 783,1 (7)$	22.805,7
Total		121.859,5

3.4. Available File Length

In determining the need for archive shelves, it is necessary to know the length of the records available in one shelf so that the shelf needs to be predicted can be known. [13]. Shelf archive length is available at the General Hospital Dr. H. Soewondo Kendal:

PP = length of sub-shelf x number of sub-shelf

$$= 105 \times 5$$

$$= 525 \text{ cm}$$

Data on the number of medical record documents in 2019 were 141437, medical record documents that will be added with predictions of additional medical record documents from 2020 to 2024 so that the calculation of the number of medical record documents in 2020 is 108,819.8 medical records, in 2021 it is 125, 170,5, the year 2022 is 141,012.3, the year 2023 is 1,56345, the year 2024 is 171,168,7.

3.5. Required Filing Length

The required data filing length can be calculated by reducing the number of medical record documents in a certain year by the number of medical record documents stored then multiplying by the results of the file expansion. [14] General Hospital Dr. H. Soewondo Kendal in 2019 has not conducted retention so that more and more medical record documents are stored on the archive shelf.

Based on the results of measuring the thickness of 30 medical record documents, it was found that the average thickness of medical record documents was 0.85 cm. (Table 5)

Table 5 Required Filing Length Calculation

Time	Medical Record document	Average Document Thickness (cm)	Filing length (cm)
2020	25938,1	0,85	22047,4
2021	25155	0,85	21381,8
2022	24371,9	0,85	20716,1
2023	23588,8	0,85	20050,5

2024	22805,7	0,85	19384,8
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3.6. Needs document shelf medical records

Determination of the need for filing shelves in 2020 to 2024 can be calculated based on the number of additional new patient medical record documents in 2015 to 2019 which are then calculated to obtain the required filing length data and available filing lengths, so that in calculating the shelf requirements for calculation results the required filing length divided by the available filing length [15].

Table 6 Prediction of Filing Shelf Needs in 2020 to 2024

Time	Medical Record Document	Filing length required	Filing lengths available	Shelf Needs
2020	25938	22047,4	525	42
2021	25155	21381,8	525	41
2022	24371,9	20716,1	525	40
2023	23588,8	20050,5	525	38
2024	22805,7	19384,8	525	37

4. Discussion

This research was conducted to determine the need for filing shelves at Dr. H. Soewondo Kendal in 2020 to 2024. From the results of interviews with filing officers at the Medical Records Department, Dr. H. Soewondo Kendal uses a centralized storage system, the numbering system used is the Unit Numbering System, and the alignment system uses the Digit Filing Terminal. In the observation results in the filing room, there are 2 types of shelves, namely iron shelves (gray) and wooden combination iron shelves with 68 shelves and each shelf having 5 sub shelves and the length of the sub shelves is 105 cm. In the measurement results, the iron shelf (gray) has a sub-shelf width of 36.5 cm and a sub-shelf height of 35 cm, while on a combination of wood, the iron shelf has a sub-shelf width of 36 cm and a sub-shelf height of 40.5 cm. obtained data the available archiving length is 525 cm. The medical record document has a length of 34.5 cm and a width of 26.5 cm, so that if the medical record document is inserted into the filing shelf, it can be neatly arranged because the width and height of the sub-shelf are in accordance with the length and width of the medical record document. The average thickness of medical record documents was 0.85. Retention in public hospital Dr. H. Soewondo in 2015 to 2019 has not been implemented due to constraints on costs, it is feared that it will cause a buildup of medical record documents so that the number of shelf needs will also continue to increase. The number of medical record documents from 2015 to 2019 was 141437. In the table for the addition of medical record documents from 2015 to 2019 it can be determined that the prediction of adding medical record documents from 2020 to 2024 is 2020 as many as 25938.1 medical record documents, year 2021 as many as 25155 medical record documents, in 2022 there were 24371.9 medical record documents, in 2023 there were 23588.8 medical record documents, in 2024 there were 22805.7 medical record documents with a total of 121859.5. The total medical record documents in 2019 will be added with the prediction of adding medical record documents in 2020-2024 so that the calculation of the length of filing required in 2020 is 22047.4 medical record documents, in 2021 there are 21381.8 medical record documents, in 2022 there are 20716, 1 medical record document, 20050.5 medical record documents in 2023, 19384.8 medical record documents in 2024.

The data for calculating shelf file predictions with the following details in 2020 requires 42 shelves, in 2021 it requires 41 shelves, 2022 requires 40 shelves, 2023 requires 38 shelves, 2024 requires 37 shelves. Based on these calculations, the results show that there is no need for additional shelves because the existing filing shelves are fulfilled, but if the RSUD Dr. H. Soewondo Kendal did not carry out retention and destruction, it would result in the increasing number of medical record documents and result in medical record documents piling up and the existing filing shelves unable to accommodate the number of medical record documents properly.

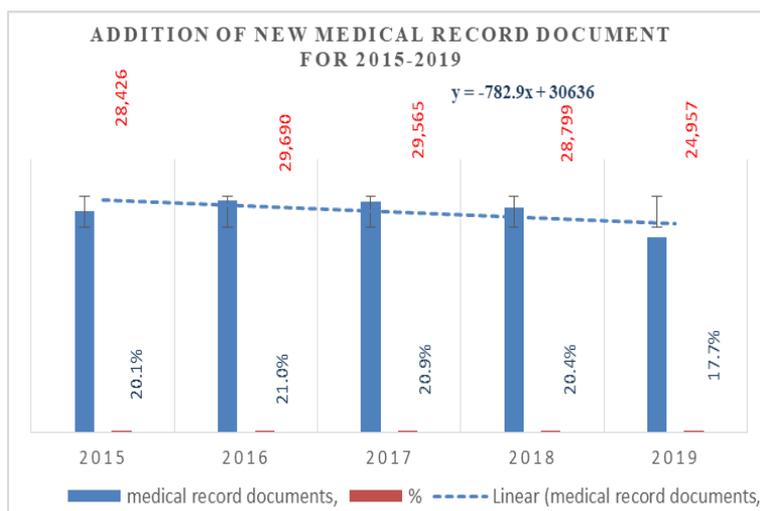


Figure 1 Addition of New Medical Record Documents for 2015 to 2019

Linear regression validation indicates that there is no increase in medical record documents, there is even a decrease in the linear equation $y = -782.9x + 30636$ this indicates a decrease in medical record documents in the hospital [16]

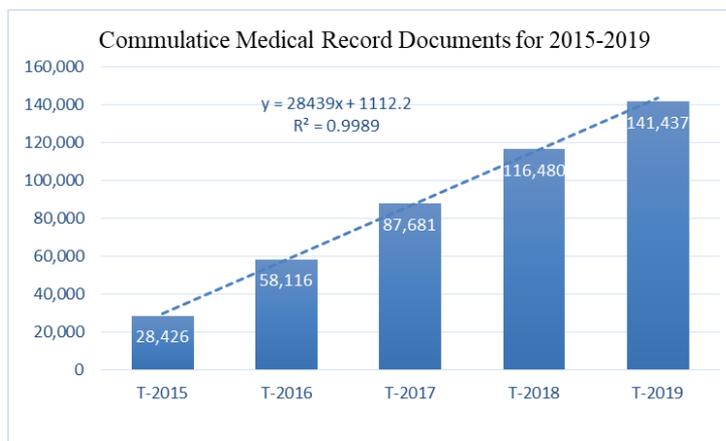


Figure 2 Cumulative Addition of New Medical Record Documents for 2015 to 2019

Linear regression validation for cumulative medical record documents in 2015-2019 showed an increase ($y = 28439x + 1112.2$), therefore retention is needed immediately so there is no accumulation of medical record documents.

5. Conclusion

The results of calculations and analysis at the General Hospital Dr. H. Soewondo Kendal does not require additional shelf filing, but retention of inactive medical record documents must be carried out immediately so that there is no accumulation of medical record documents so as not to disturb medical record officers in carrying out archiving tasks.

Compliance with ethical standards

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Disclosure of conflict of interest

All authors state that this study has no competitive interest

Statement of informed consent

Informed consent was obtained from all participants included in the study.

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