Review of Ergonomic Aspect of Filing Room Based on Indonesian Anthropometry Data to the Occupational Health and Safety (OHS)

Hidayatul Maula[1)], Qoriesa Bakti Hayyunadhifa[2)], Dian Nurhayati[3)]

1,2,3)Jurusan Rekam Medis dan Informasi Kesehatan , Poltekkes Kemenkes Semarang, Indonesia

Correspondence e-mail: qoriesabaktihayyuna@gmail.com

Abstract

The filing service is an important part of the Medical Record Unit, especially for medical record keeping. A good filing arrangement is required to facilitate the work of the officer. Spatial filing should be done based on the aspect of ergonomic and Indonesian anthropometry data so it's wouldn't causing any OHS risk for the officers. Some of the ergonomics aspects of filing room in RS PKU Muhammadiyah Yogyakarta are not in accordance with the Indonesian anthropometry data, it can lead to decreased work /productivity officer. The purpose of this research is to review the aspect of ergonomic filing room based on the Indonesian anthropometry data toward aspect of OHS. The type of research that we used is a case study research. Methods of data collection are observation and interview. Data were analyzed using descriptive statistical analysis. The results showed that the management, equipment, temperature and humidity of the filing room in RS PKU Muhammadiyah Yogyakarta is in accordance with the theory except for the footing aids. The size of the medical record storage rack is not ergonomic compared to the Indonesian anthropometry data. However, the height and width of the sub racks are in accordance with the dimensions of the medical record file. The risk of OHS that can be happen by filing officers are wildfire, get pinched by a roll o'pack, falling from the footing aids, sore feet and hands, neck pain, itching, cuts due to scratches, shortness of breath and hoarse throat.

***Keywords**: Ergonomic Aspect, Anthropometry, OHS*

1 Introduction

Medical records according to Permenkes 269 of 2008 are files that contain notes and documents about patient identities, examinations, treatments, actions and other services that have been provided to patients. Notes are written by doctors or dentists regarding actions that have been taken to the patients in the context of health services. In Chapter III Article 5, it is stated that every doctor or dentist in carrying out the medical practice is obliged to make a medical record. Therefore, every health service facility is required to maintain the medical record, which is managed by a medical record unit.

The medical record unit is one of the vital units in the hospital. Filing is one of the sub-unit that works as a store, provider and protector so that the medical information in medical records are safe, both physically and in content. Medical record is a collection of patient's health history that is included as a vital archive.

The medical record unit, especially filing, has an important role in maintaining medical records, especially in terms of storing and protecting the medical records. Medical record storage can run well if the supporting facilities in storage activities are available and the work environment also supports the activities so it can facilitate the retrieval, provision, and storage of medical records.

This convenience can be done by structuring a good workspace by paying attention to ergonomic aspects. Ergonomics or the ergonomics science is a study of humans to create a work system that is healthier, safer and more comfortable. Ergonomics aspects of a workspace must be adjusted to the anthropometric aspects or dimensions of the human body. It aims to provide comfort and safety for the officers at work. Comfort and security at work can increase the productivity of officers and improve the quality of health services provided.

Workspaces that do not pay attention to the ergonomics and anthropometric aspects can increase the chance of risks toward occupational safety and health (OSH) in terms of the dangers of physical environmental conditions, attitudes and ways of working.

Based on the preliminary study that the writers did at PKU Muhammadiyah Hospital in Yogyakarta, there were 5 filing officers at PKU Muhammadiyah Yogyakarta Hospital. The implementation of working hours for officers uses a shift system which is divided into morning shifts (07.00-14.00 WIB), afternoon (14.00-21.00 WIB) and evening (21.00-07.00 WIB). 24 hours filing services increased the workload of filing officers, and because the registration online program is 7 days before the day of the treatment appointment date at PKU Muhammadiyah Hospital in Yogyakarta, so every single day, besides providing the medical records of today's patients, the officer should also prepare the medical records of patients that already booked from the registration online program for the next day. It requires the officers to work quickly and precisely so that the patient's medical records for today and for the next day are ready to use.

Based on the observations that we've done in PKU Muhammadiyah Yogyakarta Hospital, we found that the medical record storage rack in the filing room of PKU Muhammadiyah Yogyakarta Hospital is too high compared to the height in Indonesian anthropometric data. To assist officers in retrieving medical records on the top shelf, a chair as a footing aids is provided, but the chair isn't safe so there is a risk of falling, spraining, and so on.

Other than that, because the filing room is too small it causes the distance between shelves to be too close, with an average distance of 60 cm and the distance for staff access between the shelves is also narrow, it only 77 cm. This size is not in accordance with the ideal distance according with Indonesian anthropometry data. Therefore, it is very important to adjust the ergonomics and anthropometric aspects in the filing room as a form of risk management for the Occupational Safety and Health of filing officers at PKU Muhammadiyah Hospital Yogyakarta.

1. Material and Methode

The type of research that we used is a case study research, it is a research that conducted by examining the problem through a case with a single unit. This type of research is used to describe the filing room based on ergonomics aspect and Indonesian anthropometry data to the Occupational Health and Safety on the filing room at PKU Muhammadiyah Hospital in Yogyakarta. The research was conducted in the filing room of PKU Muhammadiyah Hospital Yogyakarta. The subjects of this research were 5 filing officers at PKU Muhammadiyah Hospital Yogyakarta. The object of this research is the filing room at PKU Muhammadiyah Hospital Yogyakarta. Methods that we used to collect the data are observation and interviews. The analysis was carried out with descriptive statistical analysis.

2. Result and Discussion

The medical record storage system at PKU Muhammadiyah Yogyakarta Hospital is using a centralized system, this centralized system is a storage system where all patient's medical records are stored in one file and in one place, both for outpatient and inpatient. The alignment system used at PKU Muhammadiyah Yogyakarta Hospital is Terminal Digit Filing (TDF), which is a medical record storage system by aligning medical record folders based on the sequence of medical record numbers in the last two numbers or two last digits of the group. PKU Muhammadiyah Yogyakarta Hospital has a filing room with 16 double-faced wooden shelves and 8 roll o'pack shelves. The writers has done observations and measurements of the ergonomic aspects of the filing room and the equipment in it. We also had some interview with the filing officers related to Occupational Health and Safety (K3).

The items that were observed, measured and interviewed were as follows:

a. The ergonomics of the filing room at PKU Hospital Muhammadiyah Yogyakarta

    1) Management and Equipment in The Filing Room
        a) Building Structure

            The structure of the filing room building at PKU Muhammadiyah Hospital is strong, well maintained and clean.
        b) Roof

            The roof of the filing room at PKU Muhammadiyah Yogyakarta Hospital is strong and does not leak.
        c) Wall

            The walls of the filing room at PKU Muhammadiyah Yogyakarta Hospital are strong and has a light color.

d) Ceiling

The ceiling of the filing room at PKU Muhammadiyah Yogyakarta Hospital is strong, clean and it has a bright color.

e) Floor

The floor of the filing room at PKU Muhammadiyah Yogyakarta Hospital is strong, waterproof, flat, clean and not slippery.

f) Medical Record Security

There is a warning sign "Other than officers are prohibited to enter the room" in front of the filing room door to ensure the confidentiality of the contents of the medical record.

g) Disease Vector

There is no indication of animal nests which are disease-carrying factors such as insects (cockroaches, flies, mosquitoes) and rats in the filing room of PKU Muhammadiyah Hospital Yogyakarta.

h) Shelves / Sub Racks Size

The size of the shelf or sub rack is higher and wider than the structure, shape and alignment of medical records. Alignment of medical records at PKU Muhammadiyah Yogyakarta Hospital was carried out in portrait orientation.

i) Storage Instructions

Instructions for storing the medical records at PKU Muhammadiyah Yogyakarta Hospital using number stickers that plastered in each side of the shelf storage. The number sticker is easy to use and view.

j) Tracer

The tracer used in the filing room of PKU Muhammadiyah Hospital Yogyakarta is made of safe materials. The tracer is made from plastic materials.

k) Medical Record Color Code

Medical records at PKU Muhammadiyah Yogyakarta Hospital using a color code in the form of a sticker for the last two digits of the patient's medical record number. In addition, there is a color code that indicates the last year the medical record was used to assist filing officers in carrying out retention activities.

l) Crushers Paper Machine

PKU Muhammadiyah Yogyakarta Hospital does not have a paper shredder because the destruction of medical records is carried out by a third party.

m) Footing Aids

Footing aids in the filing room of PKU Muhammadiyah Hospital Yogyakarta is a chair that made of plastic material.

2) Temperature and Humidity

Table 4.1 Results of Temperature and Humidity Measurement

Time	Temperature	Humidity
Morning (06.30-07.00)	27°C	55%
Afternoon (12.30-13.00)	28°C	52%
Evening (16.30-17.00)	27°C	28%

Table 4.1 shows that the temperature and humidity in the filing room of PKU Muhammadiyah Yogyakarta Hospital are ideal according to the theory of Rustiyanto and Warih Ambar (2011). The ideal temperature in the room filing by Rustiyanto theory and Warih Ambar (2011) is 18°C - 28°C and the ideal humidity is 40% - 60%. The average temperature and humidity in the filing room of PKU Muhammadiyah Yogyakarta Hospital are 27.3°C and 55%, respectively.

3) Lighting and Noise

Lighting and noise were not measured scientifically by the authors due to the limitations of the measuring instrument. Based on observations by the author, there are 9 lamps, each lamp have power around 40 watts and uses 220 Volt voltage in the filing room at PKU Muhammadiyah Hospital in Yogyakarta. Each lamp is placed between 2 aisles of shelves. This causes uneven lighting.

The filing room at RS PKU Muhammadiyah Yogyakarta has a low noise level, because the filing room are adequately covered. This is in accordance with the ILO (2013) standard. This low level of noise in the room filing PKU Muhammadiyah Hospital in Yogyakarta is good for the officer’s health condition. It helps to protect the officers from hearing loss

and hearing interference weather temporary or permanent.

4) Wooden Storage Rack and Roll O'Pack

PKU Muhammadiyah Yogyakarta Hospital uses two types of storage racks, those are an open double-faced wooden shelf with 16 shelves and a roll o'pack which consists of 8 two-faced shelves.

The results of physical measurements of wood storage racks and Roll O'Pack are as follows:

Table 4.2 Measurement Results of Storage Racks and Roll O'Pack

Equipment	Size (cm)	
	Double-Faced Wooden Shelf	Roll O'Pack
The length of the storage racks	175	300
The high of the storage racks	245	235
The width of the storage racks	48	80
The high of the sub-racks	38	32
The width of the sub-racks	24	40
The distance between the storage racks	57	62
The hallway between the racks as an access way for the officers	71	82

The results of measuring the dimensions of the medical record are that the medical record has length of 30 cm and width of 23.5 cm.

b. Anthropometry

The anthropometric data that we used in this research are comes from Indonesian Anthropometric Data. The component that we measure are the length of the front body area as the reference length of the storage shelves length, size range of hands reach up as the reference of the storage shelves high size, the forearm length and medical records widths are used as a reference of the sub racks width, and the size of the shoulder width and body thickness is used as a reference for the size of the distance between storage shelves. The table of anthropometric data that we used are as follows:

Table 4.3 Comparison Result of Ergonomic Aspect Measurement against the Indonesian Anthropometric Data

Ergonomic Data	Measurement Result		Parameter	Indonesian Anthropometric Data	Explanation
	Double-Faced Wooden Shelf	Roll O'Pack			
The length of the storage racks	175	300	The length of the front body area	152.71	Not Ergonomic
The high of the storage racks	245	235	The size range of hands reach up	185.76	Not Ergonomic
The width of the storage racks	48	80	The forearm length	40.53	Not Ergonomic
The high of the sub-racks	38	32	The medical records length	>30	Ergonomic
The width of the sub-racks	24	40	The medical records width	>23.5	Ergonomic
The distance between the storage racks	57	82	The shoulder width	38.75	Not Ergonomic
			The body thickness	20.58	Not Ergonomic
The hallway between the racks as an access way for the officers	71	82	Rustian and warih ambar theory	180-200	Not ideal

c. Occupational Health and Safety (OHS) Based On Filing Officer Interview

Based on the interview results that has been done to the officer filing at PKU Muhammadiyah Hospital in Yogyakarta related to Occupational Health and Safety (OHS) known that the Occupational Health and Safety aspect and complaints from the filing officers at PKU Muhammadiyah Hospital in Yogyakarta can be seen by the table as follows:

Table 4.4 Management Occupational Health and Safety Based On the Filing Officers Interview at RS PKU Muhammadiyah

Risk of Occupational Health and Safety	Management
Safety Risk: • Wildfire • Get pinched by a roll o'pack • Falling from the footing aids	Safety Risk: • Firefighting training and fire extinguisher provider • Rotary lever repair • Provision of aluminum folding ladder
Health Risk: • Sore feet and hands • Neck pain • Itching • Cuts due to scratches • Shortness of breath and hoarse throat	Health Risk: • Take a break and don't do heavy loads at once • Use gloves and wash your hands frequently with soap or hand sanitizer • Using gloves • Using masks

3. Conclusion

a. The ergonomic aspects of the management and equipment in the filing room at PKU Muhammadiyah Yogyakarta Hospital are in accordance with the theory except for the footing aids. The temperature and humidity in the filing room at PKU Muhammadiyah Yogyakarta Hospital are ideal, the noise level is low, but the lighting is uneven.

b. Based on the anthropometric data, it can be concluded that:
   1) The length of the storage rack isn't ergonomic.
   2) The height of the storage rack isn't ergonomic compared to the anthropometric data for size range of hands reach up.
   3) The wide of the storage rack isn't ergonomic compared to the length size of the lower arm according to anthropometric data.
   4) The distance between storage racks isn't ergonomic compared to the size of the of the shoulders width based on the anthropometric data.
   5) The height and width of the sub rack are ergonomic compared to the length and width of the medical record documents.

c. The risk aspects of the Occupational Health and Safety in the filing room at RS PKU Muhammadiyah Yogyakarta includes wildfire, pinched by the roll o'pack, and fall from the footing aids. Based on the interview data, the health risks experienced by filing officers includes sore feet and hands, neck pain, itching, cuts due to scratches, shortness of breath and hoarse throat.

4. Acknowledgement

In preparing this article the writers got a lot of advice, criticism, encouragement, and guidance from various parties, which makes the writers can prepare this paper really well. Therefore, with all respect, we are enormously grateful to all of the parties that involved in the preparation of this scientific paper for the continuous encouragement, kindly advice and help.

5. References

Antropometri Indonesia. Accessed on May 2021. https://antropometriindonesia.org/

Budi, Savitri Citra. (2011). Manajemen Unit Kerja Rekam Medis. Yogyakarta: Quantum Sinergis Media.

Hatta, Gemala (Ed). (2013). Pedoman Manajemen Informasi Kesehatan di Sarana Pelayanan Keseahatan. Jakarta: UI Press.

International Labour Organization (ILO). (2013). Keselamtan dan Kesehatan di Tempat Kerja Sarana untuk Produktivitas. Jakarta: International Labour Office.

Ismaniar, Hetty. (2015). Manajemen Unit Kerja untuk: Perekam Medis dan Informatika Kesehatan, Ilmu Kesehatan Masyarakat, Keperawatan dan Kebidanan. Yogyakarta: Deepublish.

Keputusan Menteri Kesehatan Republik Indonesia Nomor340/MENKES/KEP/III/2010. Jakarta : Republik Indonesia.

Keputusan Menteri Tenaga Kerja Republik Indonesia Nomor KEP.51/MEN/1999. Jakarta: Republik Indonesia.

Keputusan Menteri Kesehatan Nomor 1405 tahun 2002 tentang Persyaratan Kesehatan Lingkungan Kerja dan Perkantoran. Jakarta: Republik Indonesia.

Notoadmodjo, Soekidjo. (2012). Metodologi Penelitian Kesehatan. Jakarta: Rineka Cipta.

Peraturan Menteri Kesehatan Republik Indonesia Nomor 269 tahun 2008 tentang Rekam Medis. Jakarta: Kementerian Kesehatan Republik Indonesia.

Peraturan Menteri Kesehatan Republik Indonesia Nomor 48 tahun 2016 tentang Standar Kesehatan dan Keselamatan Kerja Perkantoran. Jakarta: Republik Indonesia.

Rustiyanto, Ery dan Warih Ambar Rahayu. (2011). Manajemen Filing Dokumen Rekam Medis dan Informasi Kesehatan. Yogyakarta: Politeknik Kesehatan Permata Indonesia.

Undang-Undang Republik Indonesia Nomor 13 tahun 2003 tentang Ketenagakerjaan Jakarta: Republik Indonesia.

Undang-Undang Republik Indonesia Nomor 43 tahun 2009 tentang Kearsipan. Jakarta: Republik Indonesia.

Undang-Undang Republik Indonesia Nomor 43 tahun 2009 tentang Rumah Sakit. Jakarta: Republik Indonesia.