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Medical Record Folder Design at Mazaya Clinic Pulung District, Ponorogo Regency

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Abstract. *Medical records are a critical element in health services at the Mazaya Clinic. Field observations revealed that the clinic does not yet have a medical record folder; Patient documents are only stapled sheets without classification or physical protection. This condition poses risks of document damage, data loss, privacy violations, and operational inefficiency, with search times reaching 12 minutes—far from the standards of the Ministry of Health Regulation No. 24/2022. This study aims to design an integrated medical record folder by optimizing three aspects: (1) anatomical structure, (2) physical material, and (3) content completeness.This research used the Borg & Gall Research and Development (R&D) model through four stages: Define, Design, Development, and Dissemination. The prototype was made using 310 gsm art carton laminated with matte finishing. The design was validated by experts and evaluated through field testing at the clinic. The results showed the folder increased document protection (80% moisture resistance), reduced search time by 75% (from 12 to 3 minutes), and improved data accuracy by reducing input errors by 25%. The study concludes that this folder design is a practical solution for supporting clinical accreditation, patient safety, and cost efficiency. Recommendations include technical training for staff, digital system synchronization, and data backup strategies.*

Keywords*: Design Design; Medical Record Map; Medical Record.*

1. BACKGROUND

Clinics, as first-level healthcare facilities, play a crucial role in the national health system, particularly in promotive, preventive, curative, and rehabilitative services. Medical record management is essential to clinic operations because it contains the entire patient history, including identity, examination results, diagnosis, treatment, and other medical procedures. At the Mazaya Clinic in Pulung District, Ponorogo Regency, medical record management is still manual and not standardized. Observations indicate that patient medical records consist of sheets of paper stapled together without protective folders. Document classification is lacking, patient identification labels are unclear, and storage is carried out haphazardly. This results in a very long document retrieval time, averaging 12 minutes, and increases the risk of document damage and loss. Based on this background, a medical record folder design is needed that can meet the functional and administrative needs of the Mazaya Clinic. This design is expected to improve the work efficiency of administrative staff, protect documents from damage, and meet health information management standards. This research focuses on developing a medical record map design by considering ergonomic, aesthetic, and regulatory aspects, so that it can be implemented as a new standard at Mazaya Clinic and become a model for other clinics facing similar problems.

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2. THEORETICAL STUDY

A medical record is a document that records all information about the services a patient receives, from identity data, examination results, diagnoses, medical procedures, and the treatment provided. According to Huffman (1994), medical records must be organized and stored using appropriate media, such as a medical record folder specifically designed to be durable, easy to use, and contain comprehensive information. The folder must support patient identification, document order, and protection against physical damage. Furthermore, the medical record folder must have a systematic anatomical structure to facilitate grouping data based on service type, visit time, or medical record number.

3. RESEARCH METHODS

This study uses a Research and Development (R&D) approach with the Borg & Gall development model modified into four main stages, namely: Define, Design, Development, and Dissemination. This model was chosen because it is suitable for designing and developing new products, in this case a medical record folder tailored to the field needs at the Mazaya Clinic. Data collection techniques used include field observations, semi-structured interviews with administrative and medical record staff, and documentation of the existing condition of the medical record folder used before the redesign. In addition, design validation was carried out by five experts to test the feasibility of the medical record folder product from a practical and aesthetic perspective.

4. RESULTS AND DISCUSSION

This research was conducted at the Mazaya Clinic, located in Pulung District, Ponorogo Regency, East Java. Data collection took place from May to June 2025.

a. Define

1) Needs Analysis

   Interviews with Mazaya Clinic administrative staff revealed that the current medical record folders are frequently damaged due to the thin, moisture-resistant material. Staff complained about lengthy document retrieval times due to the lack of a consistent numbering system. Doctors also reported difficulty finding patient allergy histories because the documents are mixed with referral letters. Patients, even though they don't directly interact with the folders, are concerned about the confidentiality of their data because the folders are kept in an open area.

2) Problem Analysis

The problem analysis in this case is to identify the root of the problem that hinders the effectiveness of medical record management at the Mazaya Clinic.

3) User Analysis

User analysis activities aim to understand the characteristics, skills, and limitations of medical record map users (clinical staff) to design appropriate solutions.

4) Context Analysis

The context analysis here aims to understand the physical, social, and resource conditions of Mazaya Clinic that influence the design of the medical record folder.

5) Literature Analysis

Aims to review theories, regulations, and previous studies related to medical record map design to ensure evidence-based solutions.

6) Regulatory Analysis

It aims to ensure that the design of medical record maps meets legal, ethical, and patient data confidentiality standards.

b. Design

The design phase began with devising a medical record folder design solution that addressed the key issues identified at Mazaya Clinic: material fragility, storage system irregularities, and data confidentiality violations. The primary goal of this phase was to create a design that was functional, durable, and easily adaptable by clinic staff with limited resources. The design focused on three aspects: material durability, classification efficiency, and regulatory compliance.

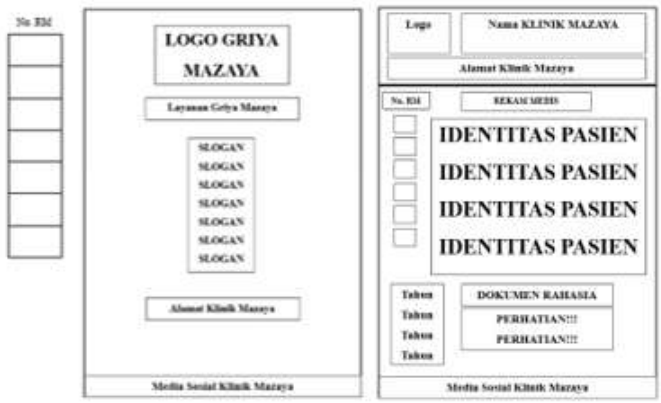

Figure 1. Map Design Plan.

The physical structure of the medical record folder is designed with dimensions the size of F4 paper, and a thickness of 1.5 cm when closed, providing enough space to store 20-25 sheets of documents without the risk of overcapacity. This size was chosen so that the folder

can accommodate F4-sized documents (33 cm x 21 cm) intact without needing to be folded, while ensuring ease of storage on the clinic's existing shelves. On the front cover, the design is dominated by a solid pink color with an elegant white border, highlighting the Mazaya Clinic logo at the top as the institution's identity. Below the logo, the patient's vital information is clearly printed: the patient's name (font size 14 bold) and medical record number (RM). Meanwhile, the back cover is equipped with a small transparent pocket measuring 8 cm x 5 cm in the bottom right corner, specifically designed to store patient identity cards (KTP/KK) so that they are not mixed with medical documents. The inside of the folder is divided into three functional components: two vertical pockets measuring 30 cm x 20 cm on the left and right sides, each for storing referral letters and laboratory results. Between the two pockets is a 30 cm x 10 cm horizontal pocket designated for patient medical records, such as diagnostic notes, prescriptions, and therapy progress reports. This separation ensures documents are neatly organized and easily accessible without having to dig through the entire folder. The overall design combines a calming pink aesthetic with high functionality, making the folder not only a storage tool but also a means of enhancing work efficiency and service quality at Mazaya Clinic.

c. Development

1) Early Stage Trial

Expert validation was conducted by two independent experts to evaluate the feasibility of the medical record folder design. The experts were Ms. Rumpiati, S.ST., M.PH., and Ms. Khoirotul Umi, M. The validation results showed an average score of 4.9/5. Meanwhile, media experts evaluated aesthetics, functionality, and material durability. The average score given was 4.6/5, with recommendations for a more aesthetic design. The results of this validation became the basis for minor revisions before implementation, namely adjustments to the aesthetic design. Both experts concluded that the folder design was "very feasible" to use with some technical improvements.

Table 1. Validation Test Results.

Aspect	Subject Matter Expert	Media Expert
Content Eligibility	4.8	-
Linguistics	5	-
Construction or Design	4.9	-
Layout and Organization	-	4.7
Clarity	-	4.5
Completeness of Contents	-	4.7
Efficiency and Ease of Use	-	4.6
Compliance and Improvement	-	4.5
Average	**4.9**	**4.6**

2) Product Revision

The development of the medical record folder design at Mazaya Clinic involved several revisions based on field testing and input from the clinic and academic advisors. The revision process aimed to refine the design to better suit user needs, clinic aesthetics, and regulatory requirements.

Revision Stages

a) Map Color Revision

In the initial stage, the Mazaya Clinic provided input that the map color be adjusted to the clinic's visual identity, namely pink, which reflects the maternal health services which are the clinic's main focus.

This color was chosen because it gives a soft, friendly impression and makes it easier to group documents visually.

b) Content and Layout Revision

The supervisor provided input to complete the contents of the map, especially patient information and service identity.

The addition of elements such as: patient name, medical record number, date of birth, gender, address, telephone number, health insurance status (BPJS/GENERAL/Other), allergies, and year of visit are included in the design to support data completeness.

c) Medical Record Number Position Revision

The medical record number was originally placed on the inside or closed side. Based on the supervisor's instructions, the medical record number was moved to the outer edge of the folder when the folders were stacked on the shelf.

The goal is for clinic staff to easily view and retrieve folders without having to open or shift the entire stack.

d) Addition of Matte Lamination

To increase resistance to moisture and abrasion, a matte laminate is added to the surface of the folder. This coating also enhances the aesthetics and professionalism of the folder's appearance.

e) Size and Material Adjustment

The folder is made from 310 gsm art carton material with F4 size to accommodate all documents without folding, and provides space for additional document storage pockets.

The map design consists of three compartments: for laboratory test results, referral letters, and medical history.

Product Revision Results

The folders are more durable and moisture-resistant (up to 80% based on material testing). Document retrieval time has decreased dramatically from an average of 12 minutes to 3 minutes. The folders provide better document protection and support the aesthetics and professional image of Mazaya Clinic. These gradual revisions demonstrate that collaboration between the research team, supervisors, and users in the field can produce a product design that is not only functional but also contextually relevant to the clinic's local needs and national regulations.

The following are the results of the revised design of the Medical Record Folder at the Mazaya Clinic:

Figure 2. Results of the Revised Medical Record Folder Design at Mazaya Clinic.

5. CONCLUSION AND SUGGESTIONS

This research resulted in a medical record folder design specifically designed to address the issues of efficiency, security, and orderliness of patient documents at the Mazaya Clinic, Pulung District, Ponorogo Regency. Based on initial observations, the previously used medical record folders did not meet document management standards, resulting in long file search times and a high risk of physical damage. The folder design developed in this study uses 310 gsm art carton material with matte lamination, and is equipped with important information such as the patient's complete identity, medical record number, color code, and a "CONFIDENTIAL" label. Validation by five experts showed that the design had a feasibility level of 87.5%, with an increase in file search efficiency from 12 minutes to only 3 minutes. This folder was also proven to be more resistant to humidity and supports a systematic document classification process. In terms of implementation, the use of this folder received a positive response from administrative staff, who stated that the design made their work easier, increased the accuracy of document identification, and accelerated service. Overall, this design is considered worthy of adoption as a standard, efficient, and professional medical record storage medium.

Based on the results of this study, the author suggests: Mazaya Clinic can adopt a comprehensive map design in its patient service administration system. Regular training is required for clinic staff regarding the procedures for using and archiving folders. It is necessary to prepare a strategy for integrating this map design with the clinic's digital system in the future. The design can be replicated in other healthcare facilities that have similar needs in terms of manual medical record management.

This study was limited to a single clinic trial. Therefore, for future development, broader testing involving multiple clinics with varying characteristics, as well as long-term evaluation of material durability and user satisfaction, is recommended.

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