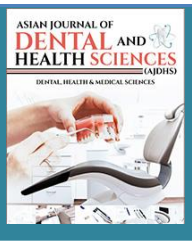

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Dentaltrack web-based application in managing dental health laboratory tools and materials

Rini Widiyastuti [1], Bimo Gigih Sasongko [1], Tedi Purnama [1]*, Eliati Sri Suharja [2]

[1] Department of Dental Health, Health Polytechnic of Jakarta I, Jakarta, Indonesia

[2] Department of Dental Health, Health Polytechnic of Tasikmalaya, Indonesia

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Abstract

Practice consumables are materials or goods that can only be used once or several times. Dental Health Education Laboratories in Indonesia still do not have a good system in managing the practice tools and materials used in their operations and are carried out manually, resulting in frequent stockouts. A web-based dental health laboratory practice tool and material management application is an information system designed to overcome problems and improve the quality of practice tool and material management in dental health education laboratories. Objective: The study aims to develop a web-based dental health laboratory practice tool and material management application and implement a web-based dental health laboratory practice tool and material management application in the Dental Health Department. This research method uses the RAD (Rapid Application Development) method for the reason of shortening the system processing time and with UML (Unified Modeling Language) as its development tool. While the application itself is made using the PHP & MySQL programming languages and Ajax to help the automatic data retrieval process. This study produces a web-based Dentaltrack application that is able to integrate all parts of the dental health education laboratory service so that it can increase the effectiveness of services to dental health students.

Keywords: Dentaltrack, application, managing, dental health, laboratory

*Address for Correspondence:

Tedi Purnama, Department of Dental Health, Health Polytechnic of Jakarta I, Jakarta, Indonesia.

INTRODUCTION

The role of laboratories in the world of education greatly supports the teaching and learning process, so that it can improve student achievement. Problems that are often encountered in laboratory learning are laboratory management, namely procurement, use, and maintenance. The concept of laboratory management consists of activities to regulate, maintain and pay attention to the safety of laboratory users supported by laboratory management officers who have an understanding and work skills in the laboratory according to regulations.[1–3]

Poor management of educational laboratories will result in the procurement of tools and materials that are not in accordance with their intended use. The inaccuracy of the tools and materials that come with what is needed as well as errors in operating the tools and improper maintenance processes are part of the problems in the laboratory, besides the very expensive price of laboratory equipment is one of the factors for implementing good management. Inventory activities aim to reduce the occurrence of loss and misuse, reduce operational costs, optimize work processes and results, improve work quality, minimize the risk of loss, damage, breakage, prevent excessive use, improve laboratory cooperation, support the creation of safe conditions, therefore it is necessary to regulate the use, storage, data collection, and security of equipment in the laboratory.[4–6]

Recording that has been done so far in the administration and operational processing of dental health laboratories, such as drug and material data using manual methods with ledgers and paper, so that it can result in data in the laboratory being lost or damaged and causing the required data information to be lost and less accurate. This causes low quality of service. With the presence of information technology, clinical services will be more effective and efficient.[7,8]

Researchers developed an Inventory Application, a tool designed to streamline and simplify the process of recording and inventorying supplies, medicines, consumables, and laboratory equipment. The application is named Dentaltrack: Inventory Application for Requests and Borrowing Goods, with the hope that this application will be the latest solution that allows automatic electronic data processing. With the support of the Educational Laboratory Staff as administrators and lecturers and students as users, this application brings

positive changes in inventory management in the Dental Health Department Laboratory environment.

METHOD AND MATERIAL

In this study, there are two methods of data collection techniques, namely data collection techniques and software development in collecting data in the following studies:

A. Data Collection Techniques

1. Observation Technique

Collecting data by directly observing the Dental Health education laboratory of the Jakarta I Health Polytechnic to obtain information about the management data collection system, services and administration used previously and what is needed for the convenience of obtaining fast data.

2. Interview Technique

Data collection is carried out by direct question and answer with the Head of the Dental Health Department, Head of the laboratory unit, Lecturers, Educational Laboratory Officers and students in order to obtain data and find the information needed.

3. Literature Study

Studying using various reference sources using books, journals and information from websites to obtain theories related to the study

B. Development Stages

Software This stage is based on the waterfall method which makes it easier to develop this information system.

RESULT AND DISCUSSION

System Development Method in developing this inventory information system, the researcher used the System Development Live Cycle development method or system development life cycle. The model that the researcher used is the waterfall model because the form of the model allows researchers to complete one stage of development before proceeding to the next stage. This makes it easier for researchers to develop the system because of the limitations of researchers who are more familiar with the model and do not meet the requirements of other models, prototypes that require a long time and continuous communication with users and RAD which requires a development team to work on various system components.[9,10]

This stage is the stage where researchers create process designs, database designs, and interface designs based on the results of the research analysis stage. The main display consists of several main menus on the menu bar which is a series of integrated menus, related to each other. The application menus are as follows:

1. Home

Contains a graphic display of information on requests, inventory, incoming and outgoing transactions, and user information that will change automatically every time there is input. Users will see an overview of important information such as the latest material requests and ongoing tool loans. Admins can access administrative functions, while users can view the status of their requests and loans

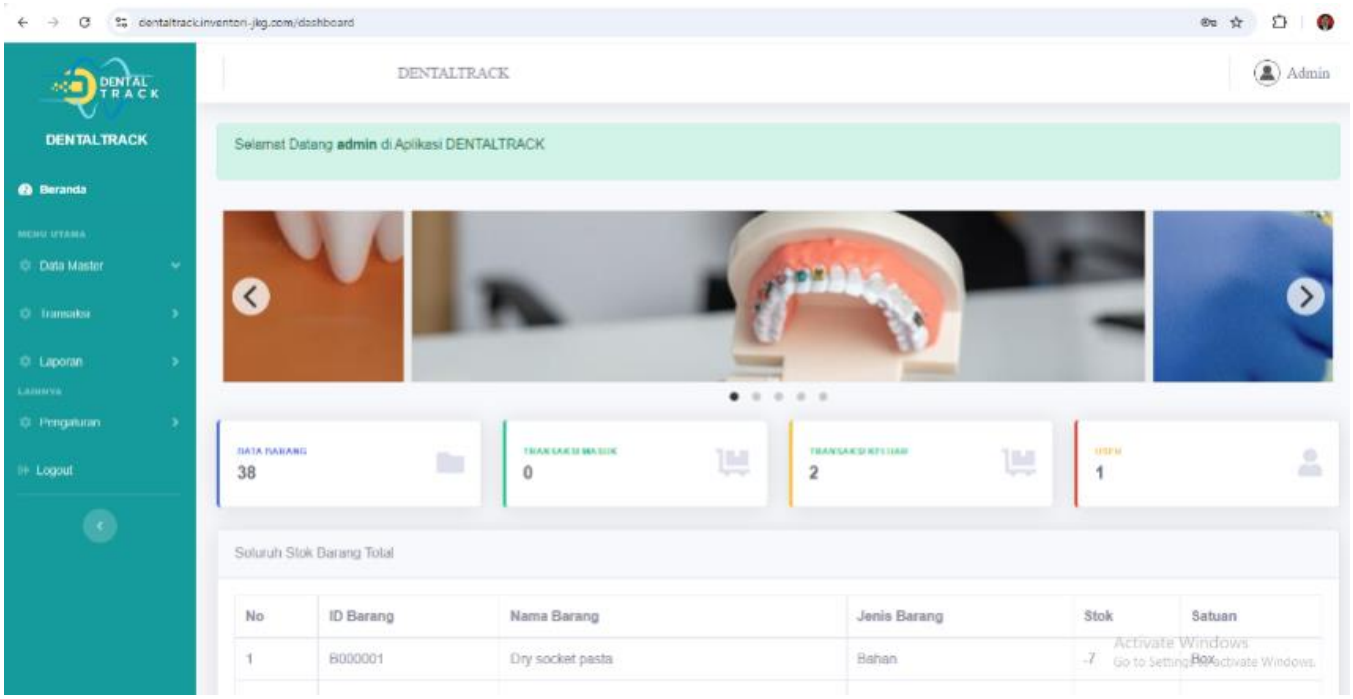

Figure 1: Home page on the dentaltrack website

2. Master Data

Contains the master data input menu from the Dentaltrack application such as Goods Data, Type of Goods, and Units which can only be accessed by the Admin.

1. Item Data

Contains a menu for inputting item data that will be displayed in the dentaltrack application. The Item Data menu allows admins to manage inventory data in the laboratory. This includes adding, editing, or deleting items. Admins can add information such as item name, serial number (if needed), initial stock, and item category.

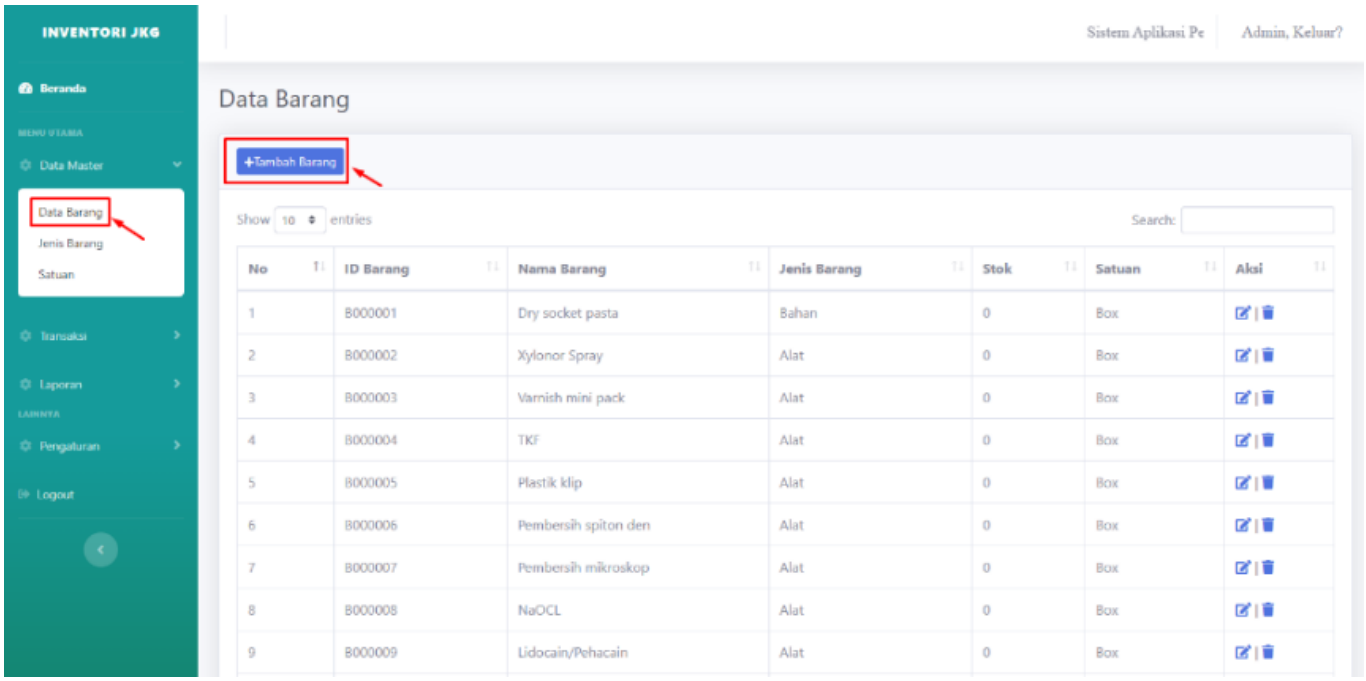

Figure 2: Item data on the dentaltrack website

2. Item Type

Contains an input menu for item categories such as tools, materials, media, etc.

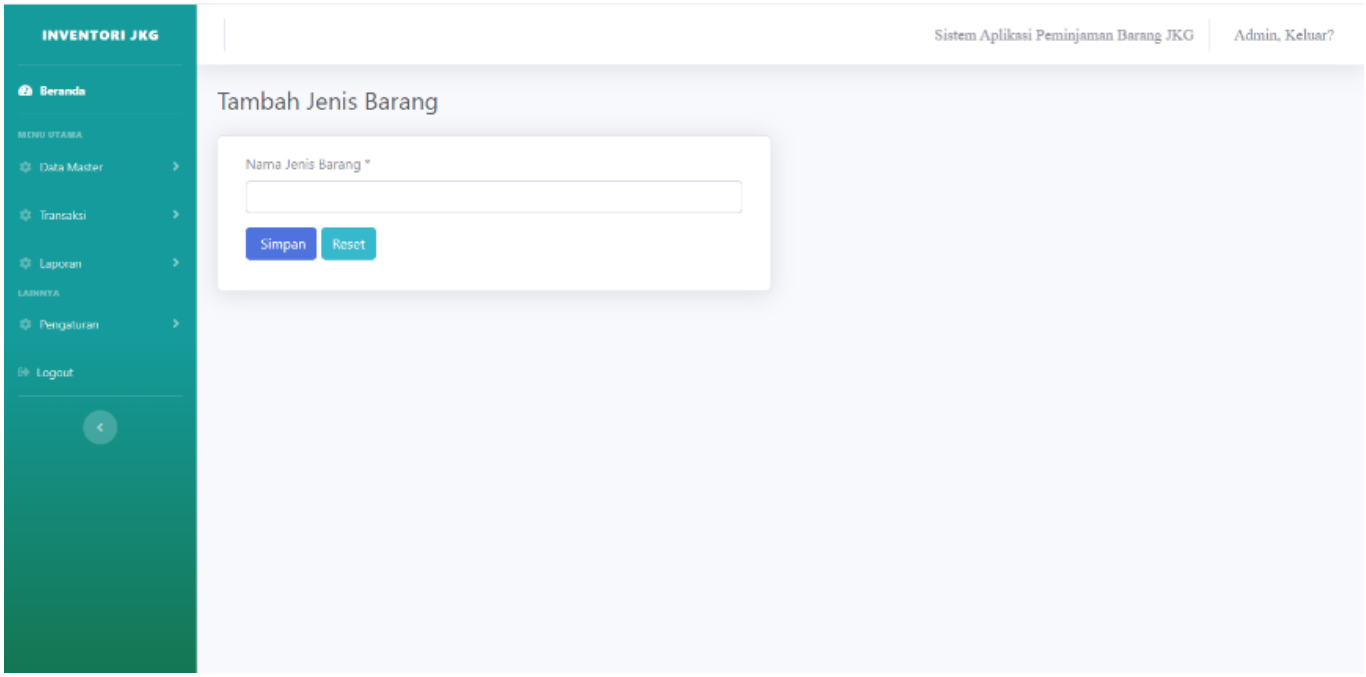

Figure 3: Item type on the dentaltrack website

3. Unit

Contains the input menu for item unit categories such as bottles, boxes, pcs, packs, sets and others.

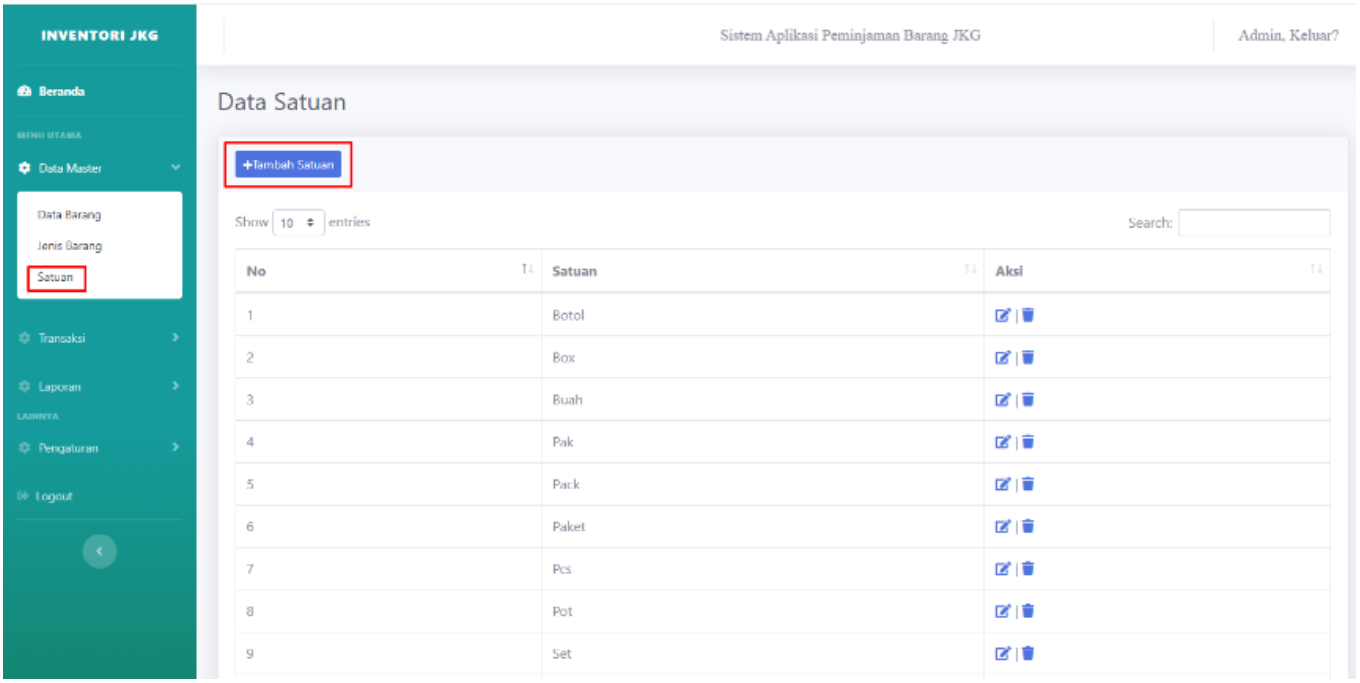

Figure 4: Unit on the dentaltrack website

4. Transaction

In this menu, the admin can see a list of incoming material requests. Information such as request date, username, and request status will be displayed. The admin can process the request by approving or rejecting it, and also update the stock of goods after the request is fulfilled. In this menu, the Deltaltrack Application admin inputs incoming receipts of inventory goods from various receipt sources based on the delivery note or invoice received. The list of incoming goods that have been input will appear on this menu page.

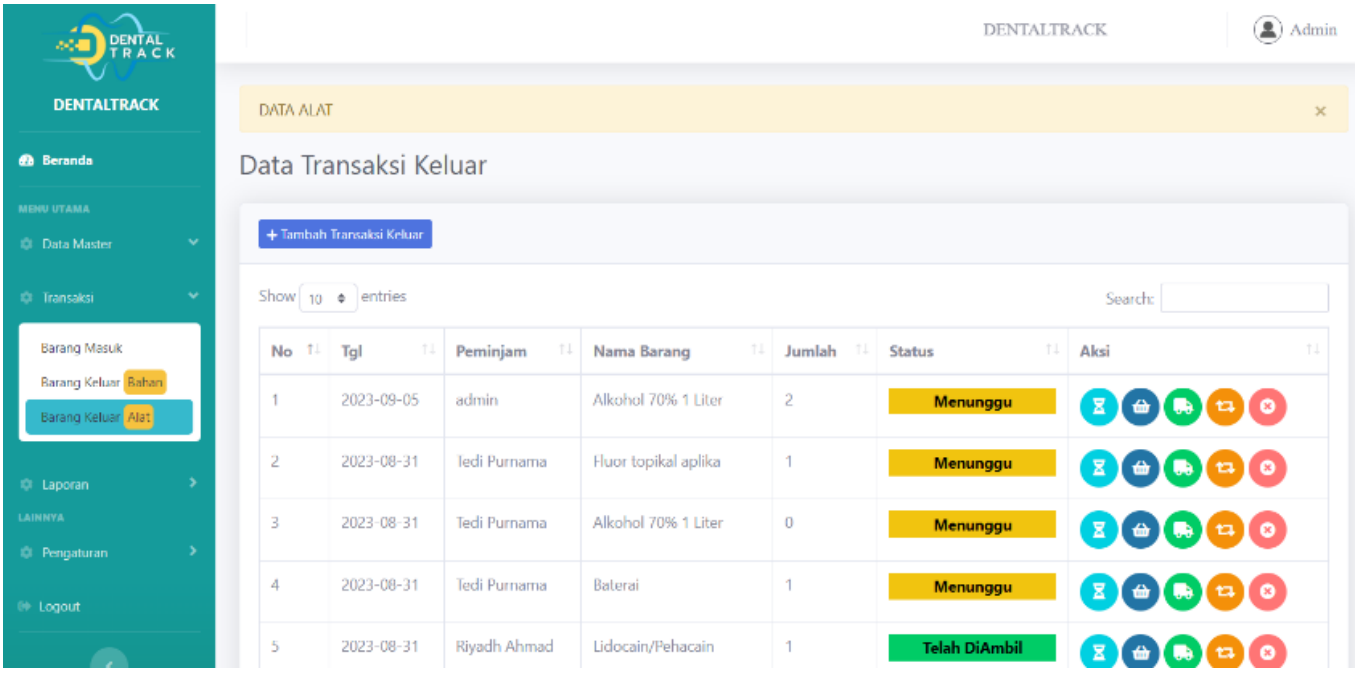

Figure 5: Transaction on the dentaltrack website

5. Report Menu

Contains a menu of incoming goods transfer transaction reports that can be sorted by date and month. This report can be downloaded in PDF or Excel format

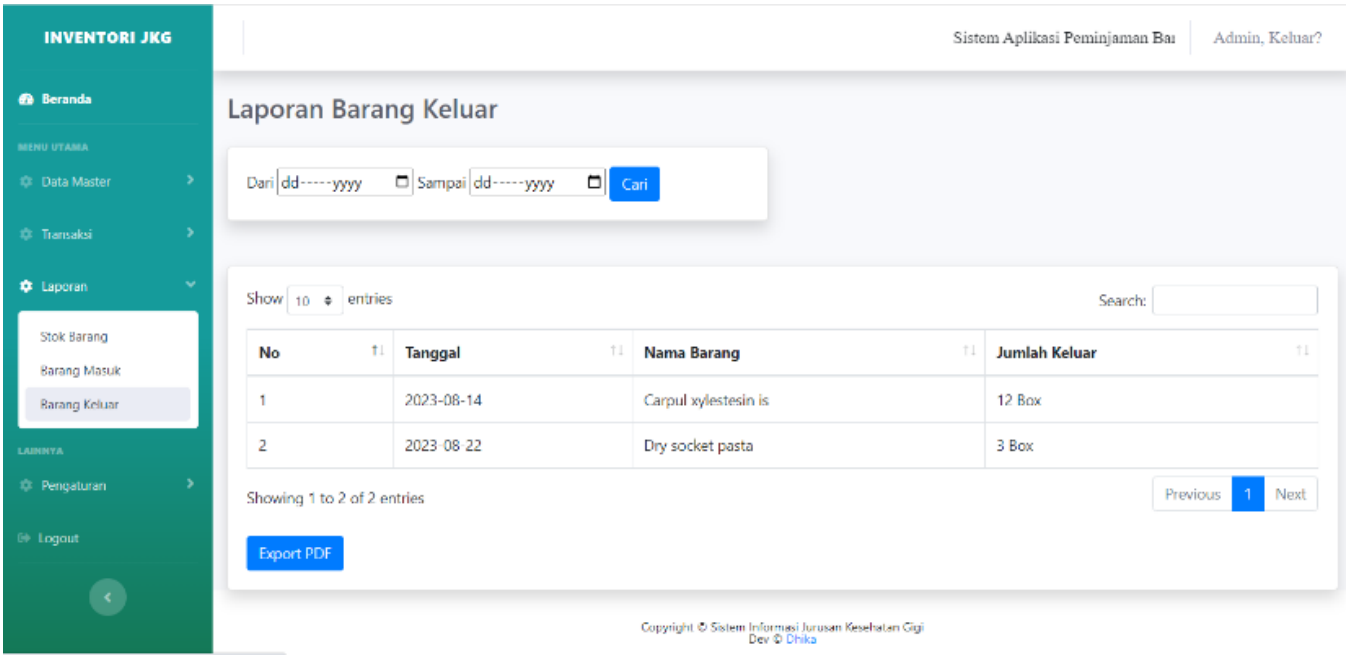

Figure 6: Report menu on the dentaltrack website

CONCLUSION

Based on the research results, it can be concluded that this research produces a Dentaltrack application system that can integrate data storage in all parts related to dental health education laboratory service activities so that it becomes a means of assisting the website-based laboratory equipment inventory system in the Dental Health Department which can be accessed by users via computers or smartphones.

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