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| RESEARCH ARTICLE

Analysis of Verlos Kamer Register System and Surgical Room Desktop-Based at Baliméd Hospital Denpasar

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| ABSTRACT
The hospital conducts a patient registration procedure with the intent of collecting information on all patients to enable the reporting of a renewable hospital information system based on information requirements. Based on study observations of the manual Verlos Kamer and surgical room registers at BaliMéd Hospital Denpasar, it was determined that data imbalances existed. This study aims to develop a desktop-based verlos chamber and surgical room register system for the BaliMéd Hospital Denpasar. The system development life cycle is the system development analysis method. The research approach is quasi-experimental, consisting of a single-group pre- and post-test. The findings of the questionnaire-based usability test were 77.79%. The outcomes of the study utilizing the Paired T-test for the Verlos Kamer database. As the p-value is known to be 0.0328 0.05, it can be concluded that the Verlos Kamer register system and desktop-based surgical room at BaliMéd Hospital Denpasar are effective in reducing the incidence of imbalanced data in the register. Given that the p-value for registering surgical rooms using the Paired T-test is 0.0034 0.05, it can be concluded that the Verlos Kamar register system and desktop-based surgical room at BaliMéd Hospital Denpasar are effective in reducing the incidence of imbalanced data in the surgical room register. Web- and mobile-enabled, certified electronic signature-affixed system development recommendations for generating birth certificates from Verlos chamber and surgical room register data.

| KEYWORDS

Verlos chamber register, surgical room register, imbalanced data, BaliMéd Hospital Denpasar.

| ARTICLE INFORMATION

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1. Introduction

A record book of data on all patients with labor cases and in the operating room called *the Verlos chamber register book and* operating room *register* book. Registering aims to obtain information for all patients in knowing *the* number and types of activities carried out in the treatment room and as a basis for making medical record reporting in hospitals. Based on the results of the author's observations at *BaliMéd* Hospital Denpasar on the recording *of the verlos chamber register* and the recording of the operating room *register,* it is manual to find *imbalanced data*. Data that has an unbalanced ratio between one data and another can be said to be *imbalanced data* (Muqiit and Nooraeni, 2020). *Imbalanced data* can occur due to manual recording of *the register Verlos chambers* and operating rooms are performed by different officers.

Based on the results of the author's observations on the recording of *the Verlos chamber register book* and the operating room *register*, seven *imbalanced data were found* in the recording of *the Verlos Kamer register for* the period October-December 2021 with an average patient visit of 54 patients per month and eleven *imbalanced data* in the operating room *register* book period of October-December 2021 with an average visit of 498 patients per month.

Problems with recording *the Verlos chamber register book* and operating room *register* book recording so that the author offers an alternative solution by designing a system of *registering Verlos chambers and desktop*-based operating rooms.

2. Literature Review

2.1 Health Information System

The health information system (SIK) is one of the six *building blocks* or is a major component of a health system. A health information system (SIK) is a set of arrangements that include: data, information, indicators, procedures, devices, technology, and interrelated human resources (Astrini et al., 2019).

2.2 Hospital Information System

Minister of Health Regulation No. 1171/Menkes/per/VI/2011 concerning Hospital Information System states that a hospital information system is a process of collecting, processing, and presenting hospital data. It was explained that the hospital information system is an application for a hospital reporting system to the Ministry of Health of the Republic of Indonesia, including hospital identity data, data on personnel working in hospitals, data on recapitulation of service activities, a compilation of data on disease or morbidity of inpatients, and compilation data outpatient illness or morbidity.

2.3 Surgical Activity Form (RL 3.6)

Reported activities include operations according to operation group and specialization. Operations are divided into four categories, namely: special operations, major operations, medium operations, and minor operations. The determination of the operation group is adjusted to the policies of each hospital. The reported specialties are detailed as follows: surgery, *obstetrics* and gynecology, neurosurgery, ENT, eye, skin and genital, dental and oral, pediatric surgery, *cardiovascular*, *orthopedic* surgery, *thorax*, *digestive*, *urology*, and others, according to the technical instructions regarding the hospital reporting information system which is an attachment to the Regulation of the Minister of Health number 1171/Menkes/per/VI/2011 concerning Hospital Information Systems

2.4 BaliMéd Denpasar Hospital Reporting System

Based on the Standard Operating Procedures Document Number SPO.RM-011 concerning Hospital Reporting Systems, it is stated that the definition of hospital reporting is information about hospitals. *BaliMéd,* which is reported regularly to the director, deputy director of medical services, deputy general director, and finance and related agencies that need it. The purpose of implementing the hospital reporting system as reference material for directors, deputy directors of medical services, deputy general directors, and finance, as well as related agencies in planning to make decisions in developing hospitals and monitoring and evaluating the quality of hospital services *is blamed*.

2.5 Analyzing and Reporting (A/R)

The *analysis* and *reporting* (*A/R*) section is one part of the medical record unit which has the main tasks, among others: Collecting hospital activity data from the daily census recorded by the hospital activity data recording service unit, recapitulating the daily census as the basis for the report hospital activities (RL_1), collecting and processing data on outpatient and inpatient diseases as the basis for morbidity reports (RL_2a and RL 2_b), collecting and processing data on specific inpatient diseases and immunization status as the basis for integrated *surveillance reports* (RL_2a.1, RL_2a.2, RL_2a.3, and RL_2c), collect and process basic hospital data as the basis for hospital condition reports (RL_3), collect and process data on the state of labor as the basis for reports on the state of labor (RL_4), collect and process data on medical equipment and data on environmental health activities as the basis for reports on medical equipment and environmental health (RL_5), collecting and processing data a *nosocomial* infection for reports on *nosocomial* infection control activities , processing medical record data for reports on hospital statistical analysis results, and collecting and processing cause-of-death data as the basis for mortality reports, as explained by Rono (2016) in the subject matter of medical records; 1-6/ASIP4315.

2.6 Register

Hospitals or health services can carry out the registration process in two ways, namely: manual and electronic. Manual registration is done using a *register book*, while electronic registration is done by entering patient data into the available registration *software*. The type of *register book* is based on the Manual for Recording Hospital Service Activities in Indonesia (Directorate General of Medical Services) Ministry of Health Republic of Indonesia second printing in 1994); there are eleven kinds of *register books* that need to be implemented by each hospital, namely: outpatient registration *register (* reg.1 *)*, outpatient service *register* book (reg.2), *register book* for inpatient registration (*reg* . 3), *register book* for inpatient services (*reg* . 4), surgery *register book (reg* . 5), *register book* for childbirth/ *abortion* (*reg.6*), *register* of actions or therapy or diagnostics (reg.7), *register* of receipt of patient specimens (*reg.8*), *register* of *laboratory* examinations (reg.9), register *of* expert doctor *referrals* (*reg.10*), and the home visit *register* (*reg* .11).

2.7 Desktop Based Application

The application comes from the word application, which is the noun form of the verb to apply, which in Indonesian means processing. In terms, a computer program or application is software or software contained in a computer that can perform certain tasks (Amri and Sujarwadi, 2018).

Abdul and Edi (2018) state that desktop-based applications are computer-based technologies that are useful for providing convenience in managing data to produce reports that are fast, precise, and accurate.

The recording flow starts from the patient registration process from the front office, then the patient is referred to the Verlos Camer room, then the Verlos Camer register is recorded for non-section Caesarea patients, and the operating room registers for section Caesarea patients. The problem that occurs is that there are imbalanced data found in the recording of the Verlos chamber register book, and imbalanced data is found in the operating room register book. Therefore, based on these problems, a desktop-based Verlos chamber and operating room register system were created at BaliMéd Hospital Denpasar in the hope of simplifying the reporting process so that it becomes balanced data.

After identifying the problems that occur, the system design stage is carried out using the SDLC stage with the waterfall method. Next, the implementation of the Verlos Chamber and operating room register system was carried out on a desktop basis. Then, the testing phase was carried out with usability testing to determine the level of usefulness of the desktop-based verlos Kamer and operating room register systems and intervention testing to conclude the effectiveness of using the desktop-based verlos Kamer and operating room register systems in hospitals.

BaliMéd Denpasar on the incidence of imbalanced verlos chamber data registers and the effectiveness of using a desktop-based verlos chamber register system and operating room at BaliMéd Hospital Denpasar on the incidence of imbalanced operating room register data.

3. Methodology

The research used was a *quasi-experimental one-group pretest-posttest design*. A *quasi-experimental one-group pretest-posttest design* is a research activity that provides an initial test (*pretest*) before the implementation of the *desktop*-based *verlos chamber and operating room register system at BaliMéd* Hospital Denpasar and after the implementation of the *desktop-based verlos chamber* and operating room register system at *BaliMéd* Hospital. Denpasar then gives a final test (*posttest*). In this study, the population used for the intervention test was all data from *the Verlos Kamer register at BaliMéd* Hospital Denpasar for the period October 1, 2021 – December 30, 2021, totaling 176 data *registers and all* operating room *register* data *at BaliMéd* Hospital Denpasar for the period October 1, 2021 – December 30, 2021, totaling 1642 data *registers*.

There are four categories of *usability* testing questionnaires or questionnaires in this research, namely: *usefulness, ease of use, ease of learning,* and *satisfaction*. In testing the *usability aspect*, data analysis was carried out by calculating the average answer based on the assessment of each answer from the *use questionnaire* filled out by the respondent; in testing, *Bivariate* analysis using *imbalanced data* incidence by providing an initial test (*pretest*) before the implementation of *the verlos chamber register system and desktop*-based operating room and providing a final test *(posttest*) after the implementation of *the verlos chamber register system* and desktop-based operating room.

The system development analysis method used to design a *desktop-based Verlos chamber* and operating room register system at *BaliMéd* Hospital Denpasar is the system development with the *system development life cycle stage,* and the method used is the *waterfall* method.

The interface design is an intermediary between the users of the system to be built, making it easier for researchers in the process of implementing a *desktop-based verlos chamber* and operating room register system at *BaliMéd* Hospital Denpasar. The design of the *login* page interface is the display of the user's window when doing the *login process* in the *Verlos Kamer* and operating room registration system based on a *desktop at BaliMéd* Hospital Denpasar. For the data used, namely: *username* and *password*.

4. Results and Discussion

4.1 Implementation of the Verlos Chamber and Desktop-Based Operating Room Register System at Baliméd Hospital Denpasar

In this study, researchers took data from *the Verlos chamber register* and operating room *register* data. Research results were obtained utilizing implementation of *the verlos Kamer register system* and operating rooms based on *desktops* and observing the incidence *of imbalanced data* in *the verlos camera register* and the number of incidents of *imbalanced data* in the operating room *register at BaliMéd* Hospital Denpasar for the period 01 March 2022 to 31 May 2022

4.2 Normality Test for Imbalanced Data Events on the Verlos Register of the BaliMéd Hospital Denpasar

The normality test was conducted to determine whether the data were normally distributed or not. This study use*s the Shapiro-Wilk* test using *the Stata software*. Testing the normality of *the pretest* and *posttest* of the incidence of *imbalanced data* on *the Verlos Kamer register* with a significance level of 5% or 0.05. The following are the results of the normality test for *pretest* and *posttest data* from the incidence of *imbalanced data* in *the Verlos Kamer register*.

Table 5. 1Normality Test Results on the *Verlos Kamer Register*

Variable Name	*Obs*	*Prob>z*
Pretest	64	0.09572
Posttest	64	0.08964

Based on the table of normality test results on the *pretest* and *post-test* of the incidence of *imbalanced data* on *the Verlos Kamer register* using Shapiro *Wilk* shows that the *pretest significance value* is 0.09572, which means the data is normally distributed and the *post-test significance value* is 0.08964 which means the data is normally distributed. In the normality test, it is known that in the *Shapiro Wilk test,* all variables have a significance level of di above 0.05; it can be concluded that all of these variables are normally distributed or have a significance value *pretest* and *post-test* for *imbalanced data* on *register verlos Kamer* normally distributed.

5. Discussion

5.1 The Incident Rate of Imbalanced Data Register Verlos Chamber Based Desktop at BaliMéd Hospital Denpasar

The intervention test for the incidence of *imbalanced data* in *the verlos Kamer register was* carried out to determine the effectiveness of using the *verlos Kamer register* system and *desktop*-based operating room at *BaliMéd* Hospital Denpasar on the incidence of *imbalanced data* in *the verlos Kamer register*. The intervention test for the incidence of *imbalanced data* in *the Verlos Kamer register* uses the *Paired T-test* on the *Stata software*. *Paired T-test* is obtained from *pretest,* and *post-test data* on the incidence of *imbalanced data verlos Kamer register* with a significance level of 5% or 0.05. The following are the results of the *Paired T-test* from the incidence of *imbalanced data* in *the Verlos camera register* at Hospital *BaliMed* Denpasar.

Table 5. 2*Paired T Test* Results From the Incident Rate of *Imbalanced Data* on *the Verlos Kamer Register*

Ranks		
Variable Name	*Obs*	Pr (|T| > |t|)
Pretest	64	0.0328
Posttest	64	

In the Paired T-test, it is known that the p-value is 0.0328 <0.05, which indicates that there is a significant difference before (pretest) and after (posttest) the implementation of the Verlos chamber register system and desktop-based operating room at the Hospital. BaliMéd Denpasar on the incidence of imbalanced data in the Verlos Kamer register so that it can be concluded that H0 is rejected and H1 is accepted, meaning that there is effectiveness in the use of the verlos Kamer register system and desktop-based operating room at BaliMéd Hospital Denpasar on the incidence of imbalanced data in the verlos Kamer register.

5.2 Operating Room Imbalanced Data Register Incident Rate Desktop Based On BaliMéd Hospital Denpasar

Intervention testing on the incidence of *imbalanced data* in the operating room *This* study was conducted to determine the effectiveness of using the *Verlos chamber register* system and *desktop*-based operating room at *BaliMéd* Hospital Denpasar on the incidence of *imbalanced data* in the operating room *register.* The intervention test for the incidence of *imbalanced data* in the operating room *register used the Paired T-test* on the *Stata software*. *Paired T-test* is obtained from *pretest* and *post-test data* from the incidence of *imbalanced data* operating room *register* with a significance level of 5% or 0.05. The following are the results of the *Paired T-test* from the incidence of *imbalanced data* in the operating room *register at BaliMéd* Hospital Denpasar.

Table 5. 3*Paired T Test* Results From the Incident Rate of *Imbalanced Data* on the Operating Room *Register*

Ranks		
Variable Name	*Obs*	Pr (|T| > |t|)
Pretest	64	0.0034
Posttest	64	

In the Paired T-test, it is known that the p-value is 0.0034 < 0.05, which indicates that there is a significant difference before (pretest) and after (posttest) the implementation of the Verlos chamber register system and desktop-based operating room at the

Hospital. BaliMéd Denpasar on the incidence of imbalanced operating room registers data so that it can be concluded that H0 is rejected and H1 is accepted, which means that there is the effective use of the verlos chamber register system and desktop-based operating room at Home BaliMéd Hospital Denpasar on the incidence of imbalanced operating room register data.

6. Conclusion

Based on the results of the analysis of the Verlos chamber register system and desktop-based operating room at BaliMéd Hospital Denpasar, it can be concluded as follows:

1. This study succeeded in designing and producing a desktop-based verlos Kamer and operating room register system at BaliMéd Hospital Denpasar with a usability test result of 77.79%.
2. The results of the research on the incidence of imbalanced data registers for desktop-based cameras using the Paired T-test known p-value is 0.0328 < 0.05 so that it can be concluded that H0 is rejected and H1 is accepted, which means that there is effectiveness in the use of the verlos Kamer register system and desktop -based operating room at BaliMéd Hospital Denpasar on the incidence of imbalanced verlos Kamer register data.
3. The results of the study on the incidence of imbalanced operating room register data based on desktop using the Paired T-test known p-value of 0.0034 < 0.05 so that it can be concluded that H0 is rejected and H1 is accepted, which means that there is effective use of the verlos chamber and chamber register system desktop -based surgery at BaliMéd Hospital Denpasar on the incidence of imbalanced operating room register data.

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