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Baby development and milestone application for integrated services post

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Abstract

Integrated Service Post (Posyandu) is a type of public health service that specifically targets young children and pregnant women as well as members of the community in general. Currently data collection is still done manually using books that record the baby's development. In this case, the reporting process can be disrupted if bookkeeping is lost or the data recorded is incorrect and inaccurate. To overcome this problem, it is necessary to design a management information system that can be used to support executive performance and monitor delays in baby growth and development and prevent stunting. The aim of this research is for Posyandu administrators to be able to process and report data. The methodology used is the System Development Life Cycle (SDLC) using the waterfall model. The stages of this method are requirements analysis, design, development, testing and implementation. The Posyandu Management Information System makes data processing and reporting easier. Based on the test results using black box testing techniques, the system can work as expected. The test result was 91.1%, which shows that this system is well accepted for its ability to monitor baby development.

Keywords

Waterfall model, Baby development, Black box

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Introduction

One of the biggest problems our country still faces is stunting, which is the condition in which children under five fail to thrive and end up with bodies that are too small for children their age. One of the issues at the "Prayogi" posyandu is that it places a lot of emphasis on keeping an eye on the nutritional status and overall health of infants and young children. A toddler is considered malnourished if their height and weight are larger or lower than average for their age. or unhealthy, where it is said that the youngster consumes too much or too little food, including excessive amounts of protein, carbs, and vitamins.

The "PRAYOGI" posyandu activities in Temanggung are run by the local health center. The posyandu is made up of community members who are chosen on their own and who subsequently receive training to become health cadres, also known as posyandu cadres. Since cadres are in charge of all actions and programs that are put into place in the posyandu, their job is crucial. The implementation of the posyandu will be significantly impacted by inactive cadres; activities and programs will not go as planned, and the nutritional status of infants and toddlers will not be identified at an early age.

Unfortunately, based on posyandu service activities, it is still manual and not yet computerized, the problems that exist in posyandu starting from recording results, examinations and services provided by midwives and posyandu cadres are still manual, then the recording is carried out by more than one officer and written separately which can cause data redundancy. Posyandu also monitors the growth of toddlers so that they do not suffer from malnutrition or what is usually called malnutrition. One of the problems of malnutrition that is prioritized for treatment in Indonesia is stunting.

The results of these measurements are needed to determine the current health condition of toddlers. So, a system is needed to be able to determine information about a toddler's health, whether the toddler is declared healthy, stunted or obese from the results of measuring the toddler's weight and height compared to ideal conditions. The Public Health Information System (SIK) [1] has an important role in monitoring and improving the health of babies and mothers. The focus is not only on medical services but also on preventive aspects and health education. By utilizing information technology [2], SIK can provide a holistic picture of baby development and maternal health. Recognizable services such as recording detailed baby growth data, including weight, height and other physical developments. This information allows health care providers [3] to identify potential growth problems and provide early intervention. The baby's immunization system can be monitored and managed efficiently. This data helps identify infants who have not received required vaccinations, supporting infectious disease prevention efforts. record antenatal and postnatal visits of pregnant women. This allows health care providers to provide appropriate care and monitor the mother's health throughout pregnancy and after delivery. platform for delivering health information to mothers and families regarding baby care, nutrition and good health practices. This support increasing public knowledge about crucial health aspects. Data collected by SIK can be processed to analyze trends in baby and mother health [4]. This information provides a basis for developing more effective health policies.

Method

Data Collection

Posyandu is held once a month and is carried out using an activity known as the 5 table system, where each table has its own task. The 5 table system, among others, has the following main activities: Posyandu is routinely implemented and driven by posyandu

cadres with technical guidance from the community health center. The minimum number of cadres in the posyandu is 5 people which is adjusted to the process carried out at the Prayogi posyandu, namely the 5 table system, namely Table 1 Registration by cadres, Table 2 Weighing toddlers by cadres, Table 3 Filling in KMS books by cadres, Table 4 Counseling and Services nutrition by community health center officers, Table 5 Health Services such as distribution of vitamins and worm medicine by cadres.

The steps used to collect data to answer the research questions posed in this research, with discussion of the location and subjects of the research population/sample, research design (preparation stage, implementation stage and reporting stage) and justification, operational definitions, research instruments, instrument development process, data collection techniques and rationale, and data analysis. The research stages used in this information system use the SDLC (Software Development Life Cycle) method.

System Analysis

This database design contains 5 entities in it. The five entities are user, toddler examiner, cadre data, toddler data and parent access. Each entity has its own attributes. Cadres fill in toddler data, examine toddlers, and process weighing data results. The database design is that the ID is the primary key because each data has a different ID. Use Case Diagrams are used to see an overview of the functions created in a system and focus on "what" the system does, not "how" a system runs. Use cases present the relationship that occurs between users and the system.

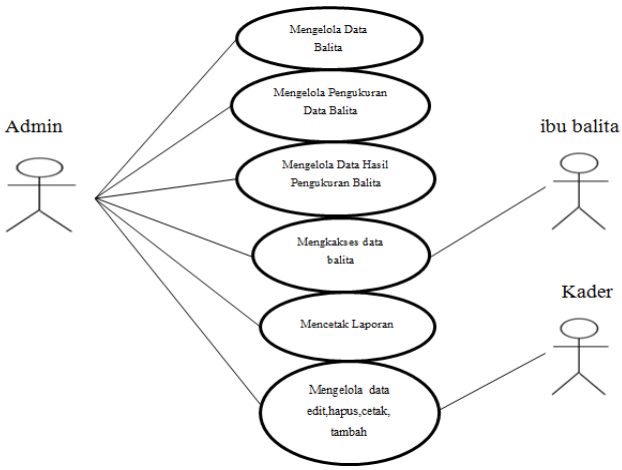

Figure 1. Use case Diagram

Activity Diagram is a tool that describes the flow of system functions (Figure 1). Activity Diagrams are used to display business work flow, and can also be used to describe a sequence of events.

Activity Diagrams (Figure 2) are used to describe the steps or activities that occur in a health information system, such as the patient registration process, medical data retrieval, or emergency handling process. This diagram helps in understanding the interactions between components in the system. For example, how patient data flows from registration to medical records. With an Activity Diagram, you can clearly see how

the health process at a web-based health center or hospital works, including activities such as logging in, managing medical records, and scheduling appointments. These diagrams help in the development of health information systems by visually understanding the steps involved, making it easier for developers to create efficient systems.

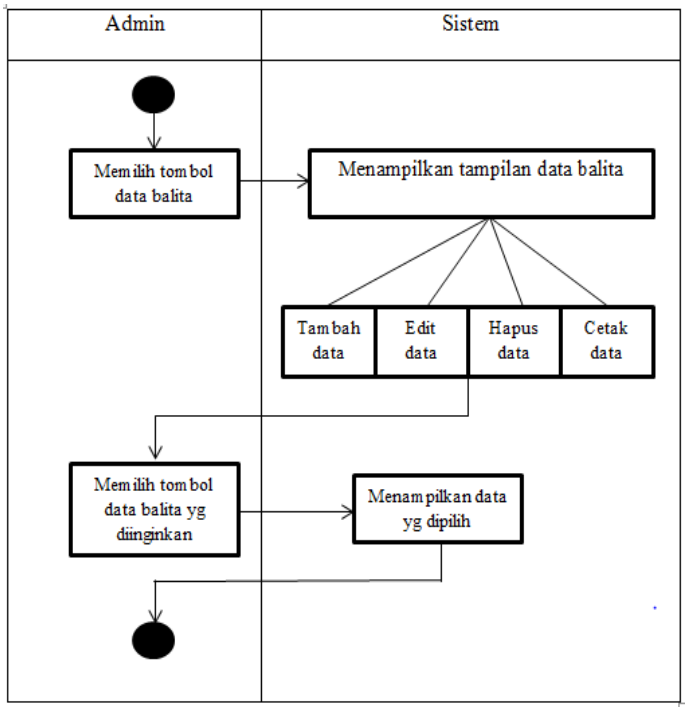

Figure 2. Activity Diagram

Results and Discussion

Web Application

Figure 3. Dashboard

The printed image will display data on the names of toddlers who have been weighed and along with information on whether the weighing results are healthy or unhealthy. The parent dashboard menu (Figure 3) displays a scale graph for children who have weighed themselves.

```
229     if (berat && tinggi && lingkarkepala && lingkarlengan) {
230         //umur 0-12 bulan
231         if ((tahun == 1 && bulan == 0) || (tahun == 0 && bulan > 0)) {
232             bbi = (bulan / 2) + 4;
233         }
234         //umur 1-10 tahun
235         if ((tahun >= 1 && bulan >= 0)) {
236             bbi = (parseFloat(tahun + "." + bulan) * 2) + 8;
237         }
```

The source code explains the calculations to find the ideal body weight for toddlers according to ages 0-5 years. Lines 231 and 232 are the formula for calculating the ideal body weight for toddlers aged 0-12 months. Lines 235 and 236 are the formula for calculating the ideal body weight for toddlers aged 1-10 years.

System Testing

At this stage, testing of the system that has been created will be carried out. This process is carried out with the aim of finding out the suitability of the system that has been created with the system design and that it can run well. Testing this system later this will be done to the admin. An 8-month-old toddler is calculated using the ideal body weight formula (age: 2) + 4 8-month-old toddlers have an ideal body weight of 8 kg. So, the toddler's weight is declared ideal or healthy compared to the ideal body weight as in the Figure 4.

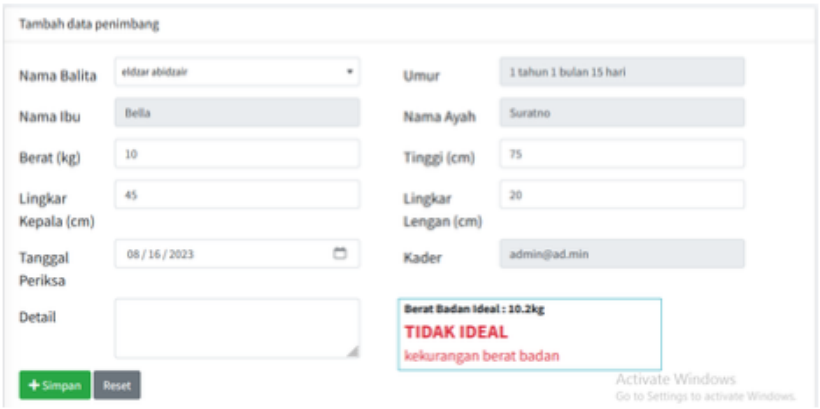

Figure 4. weight calculation is not ideal, underweight

A 1-year-old toddler is calculated using the formula ideal body weight (age: 2) + 4 1 year old toddlers have a body weight of 10 kg. So, the toddler's weight was declared not ideal, underweight compared to the ideal toddler weight data of 10.2 kg.

Conclusion

Information system design carried out in the early stages of development greatly determines the success of the information system being created because it can avoid errors in system and program processes before it reaches another stage. In addition, the SDLC development method also helps in adapting to changing system requirements. SDLC is able to complete the system to achieve the goals of each feature needed by the

admin well. This system can also help cadres to speed up the process of inputting data on toddler weighing results according to ideal body weight and also provides updated information regarding the health status of toddlers. Testing the toddler's weight weighing system, if the toddler is declared underweight or overweight, there will be a consultation on what foods the toddler needs to consume to achieve the ideal body weight.

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