



Design and development of information systems for data collection and monitoring of children's growth and development as an effort to prevent stunting in Kotapari Village

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ABSTRACT

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Stunting is one of the problems being faced by Kotapari Village. The absence of an information system about stunting that is easily accessible to the public is one of the aspects that has slowed down the resolution of the stunting problem. To accelerate the resolution of the stunting problem, it is considered necessary to have an information system that can help the community easily and quickly. Methods of data collection is done by interviews and observation. In this study the system development method used is waterfall with the supporting software used are PHP and MySQL. Seeing the reality above, it is deemed necessary to build a website-based information system that is useful to facilitate Kotapari Village and the Community in working to resolve the stunting problem in Serdang Bedagai Regency. Apart from being able to provide stunting information to the community, this application also has a child health check menu related to child growth and a discussion menu that can be used by the community to communicate with Kotapari Village.

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1. INTRODUCTION

Children are an important thing in a family, therefore children's health is very important. Child health problems are one of the main problems in the health sector that are currently happening in Indonesia. The degree of children's health reflects the health status of the nation, because children as the nation's next generation have abilities that can be developed in continuing the nation's development. Based on these reasons, children's health issues are prioritized in the planning or arrangement of nation-building (Utami et al., 2019) Maintaining health should start early (Hailu et al., 2020). Because children's physical and mental health greatly influences their growth and development, both in social and educational terms. According to Mellia Christia, MSi. M. Phil, a psychologist, said that children who are physically healthy will develop according to other children of their age (Berhe et al., 2019). For example, starting to walk normally, can talk

normally, and other normal abilities. It will all have an impact on the physical and mental health of children. If a child develops physically because he is given foods with balanced nutrition, then when he grows up, like other friends, the child feels confident, from there his mental health is built. Children feel loved by their parents because they pay attention to their food and nutritional intake(Conway et al., 2020).

But not all children have sufficient nutrition. Some children are malnourished, so their growth is problematic. Among the growth problems is stunting. Stunting is a nutritional problem that occurs in Indonesia. The impact of stunting is not only felt by individuals who experience it, but also has an impact on the wheels of the economy and national development. This is because stunting human resources are of lower quality than normal human resources(Rah et al., 2020).

Stunting in Kotapari Village occurred due to poor parenting styles and poor nutritional intake. Then the reason why parents' upbringing can be bad is usually caused by a mother's lack of knowledge in caring for or caring for children, the mother's lack of knowledge can be caused by the information that the mother gets in terms of parenting, especially so that she doesn't get stunted, it doesn't exist or Many mothers find it difficult to get this information(Hompage et al., 2020). So that many children in Indonesia and especially in Kotapari Village are stunted. Handling of stunting in children has become a national program including a program from the Municipal Government of Kotapari Village through the Kotapari Village Health Office(Sadida et al., 2022). Even though it has become a regional and national program, currently there are still many parents who are not concerned with the development of their children's growth, including in terms of stunting. This is because most parents now do not know this information and they are reluctant to check their child's growth regularly because of difficulties in taking the time to have their child checked at the Puskesmas or Posyandu(Purbasari et al., 2021).

So from this the author tries to find a solution by presenting information about stunting and stunting checks that can be done easily by parents themselves at home or anywhere, namely by presenting a "Web-Based Stunting Prevention Information System for Children in Kotapari Village"(Pham et al., 2021).

Research on Information Systems related to Web-based child health has also been raised as a research topic by other researchers. For example, a study entitled "Web-Based Birth and Growth Data Collection Information System" provides information about infant growth and development by including baby data at the Posyandu, baby weight data and sample data at the Posyandu(Beal et al., 2019)

Another study entitled "Web-Based Surakarta Health Service Information System" provides information about health services to the community in the Surakarta area as well as information on hospitals or health centers that can be accessed by the public at large(Chilyabanyama et al., 2022)Both articles are used to support health information and can be accessed mobile (web-based). However, these two articles have not focused on discussing stunting and health checks in children. In this study, it focused more on information about stunting in children, checking children's health from stunting and consulting with experts regarding stunting. In addition, this system is web-based(Rahutomo et al., 2020).

2. RESEARCH METHOD

There are three methods used to design and analyze the system in this study, namely observation, interview and literature study. Observations were made by visiting the Kotapari Village Health Office to obtain data on the condition of children in Kotapari Village who were affected by stunting. The next interview was conducted with the Head of the Public Health Division of the Serdang Bedagai District Health Office(Moniaga et al., 2019). From these interviews, data was obtained regarding stunting in Kotapari Village for the past four years, the handling and prevention of stunting that had been carried out

by the Kotapari Village Health Office on children in the Kotapari Village District area. For data or other references obtained by looking for information through books and websites. For the development of the system, the author uses the Waterfall method, namely that each stage must be completed in full before proceeding to the next stage to avoid repeating the stages.(Chilinda et al., 2021)

2.1 Observed Parameters

a. Observed Parameters

It needs to be done in the early stages of research because it is preferable in the manufacture or development of a system to be built according to user needs or the problem to be solved, this is directly related to object-oriented programming analysis(Putri Efendy & Setiawan, 2021).

b. System Analysis

Running System Analysis needs to be done because the research is done after analyzing the problem, thus in line with the running system analysis, after writing the results of the running system analysis, the next step is to analyze the system proposed at this stage, the researcher has started to focus on the design of the system to be built(Putri Efendy & Setiawan, 2021).

c. System Design

At this stage, the researcher designed the user interface according to the objectoriented programming analysis method.

d. Coding

The coding stage is carried out after the user interface graphic design is deemed appropriate to the needs of the application being built.

e. Implementation

The implementation of the built application is carried out to test whether the function of the design and application requirements are in accordance with what was designed(Hijrawati et al., 2021).

f. Testing

The testing stages are very important to do to test the final results of the function of each design for the application.

2.2 The scope of research

So that research is focused on solving the problems raised, it will be better to limit the scope of the system to be built, based on the existing problems, the problem boundaries are determined as follows(Mulidah et al., 2022).

- a. The information system for data collection and monitoring of child growth and development was built based on data from the Kota Pari village community, which was taken in collaboration with village officials, PUSKESMAS and Posyandu.
- b. Development of information systems using the waterfall method.
- c. The framework used by codeigniter.
- d. Database design using MySql.
- e. Programming languages use PHP and Javascript
- f. The Graphic User Interface is designed using the Unifield Modeling Language (UML)
- g. The application is implemented directly to the Kota Pari village community.
- h. Application testing is carried out using the -t test technique and the gain test, where the t-test is carried out to test the hypothesis and the gain test is to find out the significant results of the level of expertise of the people of Kota Pari Village.

2.3 Data Collection Techniques

The use of methodology in conducting research is useful for supporting the preparation of research reports based on the data obtained during the research. There are several methods that can be used including:

a. Interview Method

Interview method is a method in which the author gives a question to the source to get complete information(Nwosu & Ataguba, 2020).

b. Observation Method

The observation method is a method in which researchers directly observe an activity that occurs in the field. This method is carried out to obtain some information or documentation that will be carried out to complete the data of a research that will be examined(Huicho et al., 2020).

c. Literature Method

Literature method is a method used by writers to obtain information based on book sources, journals(Shinta et al., 2020).

2.4 Population and Sample

Sampling by purposive data collection techniques using questionnaires and tests. Information system application for data collection and monitoring of child growth and development which is built by utilizing web-based technology so that complexity problems are handled by computer simulation technology. Implementing the Information System application for data collection and monitoring of child growth and development in online information exchange to support the data update process(Shinta et al., 2020).

3. RESULTS AND DISCUSSIONS

After making observations in the field, especially at the Pari City community health center. So far, several efforts have been made to prevent stunting, namely by educating the public regarding stunting prevention programs and providing nutritional food and vitamins for children under five. Recording related to stunting prevention programs is still done manually.

Regarding the issue of recording that is done manually, the researchers offer an information system to prevent stunting, in which the information system can be used for data collection and to monitor what efforts have been made by related parties in efforts to prevent stunting from the time of pregnant women to children. 5 years old. And in its implementation, this stunting prevention information system is also equipped for public health services in general as well as online health consultation services. An overview of the use of the stunting prevention information system can be seen from the use case diagram below;

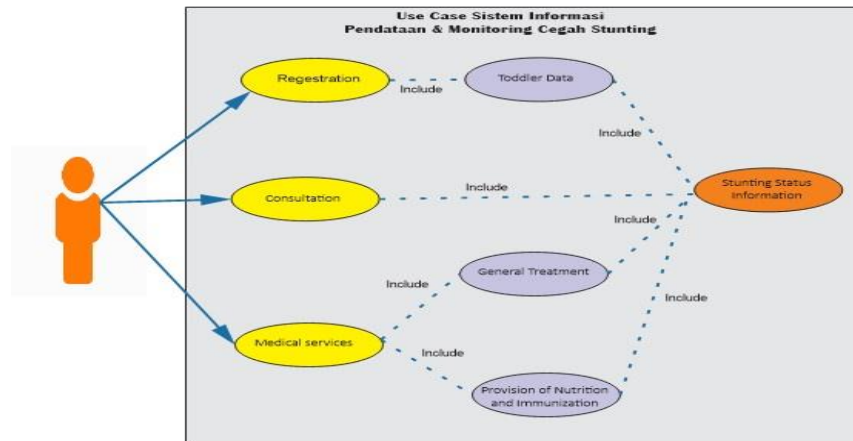


Figure 1. Use Case Diagram Stunting Prevention Information System

The results of this system display are the implementation of the system design. The following are the results of the displays of the system that has been successfully created:

Main Menu Page Display, Based on figure 1. Page Display This main menu is the main menu display of the application which will appear the first time when the user opens the application. This menu contains 5 items, namely the menu What is stunting, how to prevent it, how to handle it, check children's health and contact us.



Figure 2. Display of the main page

After opening the main page of the stunting prevention information system via www.sehatkotapari.my.id users can register themselves independently or can also be registered through officers.

Figure 3. Registration Form for data collection

After independent data collection by residents or registered by officers, the next step is that the manager can process data for any medical history that has been given to residents who come to get medical services or matters related to stunting prevention.

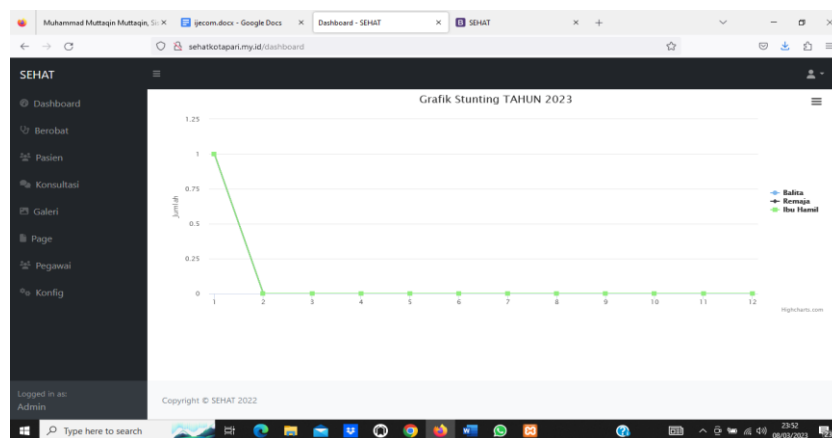


Figure 4. Display of the manager page

The What Is Stunting page displays information about stunting. This How to Prevent Stunting page displays explanations of information on how to prevent stunting in children. The page on how to handle stunting displays information about how to deal with stunting in children. The Stunting Data in Kotapari Village page displays information explanation regarding the stunting data in Kotapari Village. The Child Health Check page contains a system for checking children's health from stunting by means of the user entering the child's personal data, age, height and weight of the child, then the user can immediately check the child's condition whether it is normal or indicated stunting, after that the user can view the data again via data view page. The display of the child health check page is shown in Figure 5 below. The View Data page displays child health check data that has been checked by the user. Finally, the Contact Us Menu page displays a menu consisting of the Chat Page (displays the conversation between the user and the admin. On this page the user can send messages to the admin), About us (displays an explanation about this application). and Profile (displays the identity of the

user consisting of name, address, gender, email and password and there is a button to exit).

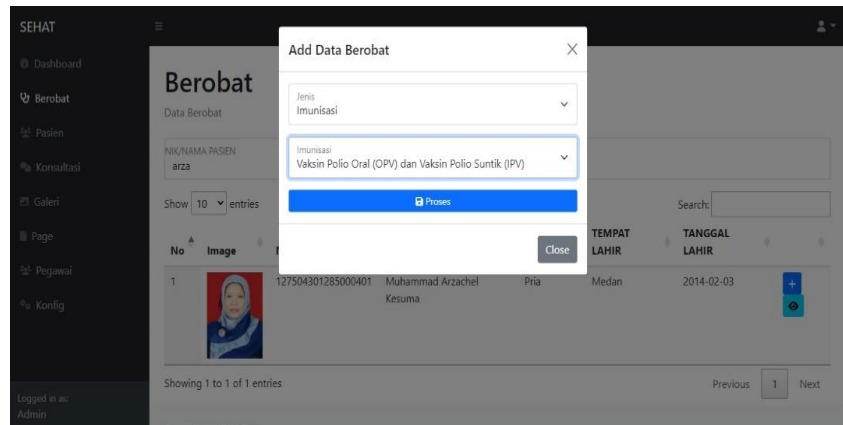


Figure 5. Display of the Child Health Check Page

4. CONCLUSIONS

Periodic health checks on children under five from the time of pregnancy up to the age of 5 years are very important to do in an effort to prevent stunting cases in Kota Pari village. And the implementation of an information system for data collection and monitoring of child growth and development in the context of preventing stunting cases in Kota Pari has had a very good impact on the community and village apparatus of Kota Pari, especially in relation to data related to stunting cases, which so far are still under investigation. do it manually by village officials and village health workers.

In this study, of course, there are many limitations, especially in the implementation of the information system which is still web-based with a limited scope for the village scale, so this information system is not integrated with existing Health monitoring information systems at the provincial and national levels. For future development, similar research can be made based on mobile applications and integrated with existing health information systems at the provincial and national levels.

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