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Application of Growth Monitoring System Web Based to Monitor Growth toodler

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ABSTRACT The community service program "Implementation of a Web-Based Growth Monitoring System Tool for Monitoring the Growth and Development of Toddlers" aims to introduce and implement a web-based Growth Monitoring System (GMS) tool in monitoring the growth and development of toddlers effectively and accurately. Partners in this community service program are actors health workers and posyandu cadres in the Kenjeran Community Health Center area, Kenjeran Village, Bulak District, Surabaya City. Through this system, health workers and parents can access toddler growth data, such as weight, height and nutritional status, in real-time. It is hoped that this activity can increase public awareness regarding the importance of monitoring children's growth and development, as well as help detect early nutritional problems or suboptimal growth, so that treatment can be carried out more quickly and precisely. The results of this service activity show that the application of a web-based Growth Monitoring System (GMS). has helped improve monitoring of toddler growth and development in target communities. Health workers and parents can now access toddler growth data more easily, structured and in real-time. This system makes it easier to detect nutritional problems or growth disorders early, so that treatment can be taken more quickly. Community participation in these activities has also increased, with a better understanding of the importance of monitoring children's growth and development to ensure the well-being and health of toddlers.

INDEX TERMS Growth Monitoring System, Web, Toddler.

I. INTRODUCTION

The partner in this community service program is the health worker of Kenjeran health center, Bulak sub-district, Surabaya city. Kenjeran village has a population of 7,271 people. Including 1,518 toddlers. It has 2 health facilities, Kenjeran community health center and Hanundas training center outpatient clinic. Kenjeran village is also known as a beach tourism village, so it's no wonder that many residents make a living by trading. From trading typical souvenirs and food. Even though the village near the beach has abundant natural resources. This should suppress the malnutrition rate in this area. In fact, the main factor causing the poor growth of toddlers in this area is the lack of maternal supervision and care for their toddlers.

Monitoring and measuring the nutrition of children under five has only been done manually. In terms of human resources who understand the growth and development of toddlers, it is actually sufficient to measure and monitor the growth and development of children. So this is very potential to be developed in terms of health technology. Effective and good measurement and monitoring of child growth and development will support the suppression of malnutrition in Kenjeran village. Therefore, along with the times, minimalist and easy-to-use tools are currently most needed. Nowadays, digital equipment is the main choice in modern times, where mothers of toddlers no longer need to carry records for their own children. The community simply comes to the health center and takes digital measurements, the results of the measurements can be monitored via the website so that the mother does not need to bring the child's nutrition records in the past. improve community services and related information. On the other hand, Kenjeran Village has great potential with its existing human resources and location not far from the city center.

The problems faced by the community service partners in this community are several things including:

a. Health Management Field: where the health center takes measurements manually. So that it causes a lack of effectiveness in monitoring the growth and development of toddlers

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b. Puskesmas Information System Field: where the partner does not yet have an information system portal that provides information on measuring and monitoring the growth and development of toddlers.

Referring to the situation analysis and the existing problem points, the problems still faced by partners include health management and the unavailability of information systems at the Kenjeran health center.

II. METHOD

Based on the problems faced by partners as described, namely measurement and monitoring still using manual methods, health technology and information systems that are not yet available at the Kenjeran health center. Therefore, in community service activities with the Partner Village Development Program (PPDM) scheme entitled "Application of Growth Monitoring System Tools to Monitor Toddler Growth and Development", the proposer offers several solutions including:

A. *SOLUTIONS IN THE HEALTH SECTOR*

To improve the measurement and monitoring of toddler growth and development, based on the agreement between the proposing team and partners in this community service activity, the proponents will provide seminars related to digital anthropometry. Furthermore, the proposer will provide assistance for measuring and monitoring the growth and development of toddlers. The output TARGET of health sector activities is measurement and monitoring that makes it easy for users.

B. INFORMATION SYSTEM SOLUTION.

To improve the dissemination of information related to Kenjeran Village, the proponents and partners will create an information system portal for Kenjeran Village, so that all forms of products, potential and activities of the Village can be accessed by the wider community. The output TARGET of the Information System field activity is the availability of the Kenjeran Village domain and website which includes the village profile and all available potential.

III. IMPLEMENTATION

The Community Service activities are carried out starting in 2024 and the location of the activities is in Kenjeran Village, Bulak District, Surabaya City. The results achieved in this Independent PKM activity are as follows:

Phase 1 Health sector:

a. Organizing a Forum Group Discussion (FGD) with puskesmas and cadres to capture the problems and initial understanding of the Kenjeran Village community.
b. Preparing materials and organizing digital anthropometry training
c. Conducting measurement assistance with PPDM members and students
d. Providing assistance to partners by the pengabmas team for the account registration process on the website
e. Evaluation of Phase 2 of the Information System field:

1. Organizing a Forum Group Discussion (FGD) with puskesmas and several community cadres of kenjeran village.
2. Preparing materials and organizing a mini workshop
3. Assistance with PPDM members and students in monitoring the website.
4. Provide assistance to partners by the pengabmas team for the monitoring process on the website.
5. Evaluating the development of the information system portal during the Pengabmas activity period and after the activity together with partners, lecturers and students to see the independence of residents in using the tool.

IV. RESULTS AND DISCUSION

This activity was carried out at Posyandu Gelombang Cinta II, which is one of the posyandu under the guidance of

FIGURE 1. Posyandu Gelombang Cinta II

Puskesmas Kenjeran, Bulak Sub-district, Surabaya City. The posyandu has one village midwife in charge of health services, assisted by nine posyandu cadres who actively participate in daily activities. Posyandu Gelombang Cinta II serves 55 toddlers with various health monitoring activities, such as weight and height measurement, immunization, and health education to parents of toddlers to support optimal growth and development.

FIGURE 1, The activity began with a briefing and opening by the local village midwife, who explained the purpose and importance of this activity. Afterwards, an explanation session on the use of the Growth Monitoring System (GMS) tool was held for the posyandu cadres. This session aimed to ensure that the cadres understood how to operate the tool to effectively monitor the growth and development of children under five. The explanation includes how to measure the weight and height of toddlers, as well as how the data can be input and monitored through a web-based system to support toddler health services.The following are a series of implementation activities that have been carried out:

1. Welcome and Opening: The activity began with a welcome and opening by the local village midwife.
2. Health Briefing: Briefing on the importance of maintaining the health of toddlers and monitoring their growth and development regularly.
3. Tool Installation Preparation: Installation and preparation of Growth Monitoring System (GMS) tools for use in

monitoring.
4. Explanation of Tool Use: Training to posyandu cadres on how to use the GMS tool appropriately.
5. Tool Application for Toddlers: Direct demonstration of the application of tools for monitoring toddler growth and development.
6. Tool Application for Infants Under 1 Year: The use of the GMS tool is also applied to infants under 1 year old.
7. Handover of Tool Donation: Official handover of the GMS tool to the posyandu as a form of donation.
8. Closing: The activity was closed with closing remarks from the village midwife.

FIGURE 2. Welcome and opening of the activity

FIGURE 2, On this occasion, we launched a community service activity titled "Application of Growth Monitoring System Web-Based to Monitor Growth of Toddlers." This initiative is designed to introduce and implement a web-based system that enables more accurate and efficient monitoring of toddler growth and development. The program utilizes baby scales as a key tool for measuring essential physical data, such as weight. This data is then seamlessly integrated into a web-based system, allowing for real-time tracking and analysis. The goal is to provide caregivers with accessible, reliable information to support the healthy growth and development of toddlers.

Figure 3. Health briefing and tool use

FIGURE 3, Before starting the activity, we emphasized the importance of health, particularly for children, and provided an explanation to the local midwife on how to properly use the tool. This training is crucial because, after completing the community service, we will be handing over the tool to the Integrated Health Post (Posyandu). The midwife will play a key role in ensuring that the tool is used effectively to monitor the growth and development of toddlers. This handover ensures the continuity of the monitoring system and empowers local health workers to provide ongoing care and support to the community.

FIGURE 4. Tool Installation Preparation

Figure 5. Explanation of Tool Usage

FIGURE 4, This is the preparation stage of the tool, where the installation of key components takes place. The components installed include batteries, sensors, and mechanical connections designed for measuring height. The mechanical design has been carefully developed to allow the tool to be easily disassembled and reassembled when needed. This modular structure enhances the tool's portability and flexibility, making it suitable for various environments. It also ensures that maintenance and upgrades can be performed with ease, helping to maintain the tool's functionality and reliability. This stage is crucial for ensuring the tool operates effectively in monitoring toddler growth. FIGURE 5, The next step involves explaining the use of the tool to the Posyandu cadres. This explanation covers how the tool operates, its parameters, and how to connect it to the internet to send data to the website. The cadres will be guided on how to use the tool to measure the growth of toddlers, ensuring accurate data collection. Additionally, an introduction to the website's display will be provided, where the cadres will learn how to input patient data before taking measurements. This process ensures that the tool is properly integrated with the web-based system for efficient monitoring and tracking of growth.

FIGURE 6 (a), Before starting the activity, we explained the importance of children's health, particularly in early development, and demonstrated to the local midwife how to use the tool to monitor toddler 1's growth. The midwife was

rained in taking accurate measurements, such as weight, and how to input this data into the web-based system for tracking. We emphasized the importance of accurate data entry and regular monitoring. After completing the community service program, we will officially hand over the tool to the Integrated Health Post, where it will be used to continuously monitor toddler 1's growth and ensure proper health care.

FIGURE 6 (b), The activity began with an explanation of the

(a)

(b)

FIGURE 6 Tool Aplication for Toddle 1 Year (a), 2 Year (b)

critical role of health monitoring, especially for children, followed by a practical demonstration for the local midwife on using the tool for measuring toddler 2's growth. The midwife was shown how to take accurate physical measurements, like weight, and how to enter the data into the web-based system. We emphasized the importance of timely and accurate data entry for effective tracking. Once the community service concludes, the tool will be handed over to the Integrated Health Post to continue monitoring toddler 2's development and ensure consistent growth tracking.

FIGURE 6 (c), At the start of the activity, we highlighted the significance of monitoring children's health and demonstrated to the local midwife how to use the tool for measuring toddler 3's growth. The midwife received step-by-step training on how to take precise measurements, including weight, and how to enter this data into the system. We emphasized the importance of consistency in tracking the growth progress. After completing the community service program, the tool will be handed over to the Integrated Health Post, where it will be used to monitor toddler 3's development and provide ongoing health assessments.

FIGURE 6 (d), We started the activity by explaining the

(c)

(d)

FIGURE 6 Tool Aplication for Toddle 3 Year (a), 4 Year (b)

importance of monitoring children's health, particularly during early childhood, and provided a demonstration for the local midwife on how to use the tool to measure toddler 4's growth. The midwife was trained to accurately measure physical data such as weight and to input this information into the web-based system. We focused on ensuring the midwife understood how to use the system effectively for continuous growth tracking. Once the community service concludes, the tool will be handed over to the Integrated Health Post, where it will be used to monitor toddler 4's health and development. FIGURE 7, For babies under 1 year old, the measurement is done while the baby is lying down. The first step is to input the baby's data into the system, followed by the measurement stage. Since the baby is lying down, the measurements taken include body length and weight. The baby's length is carefully measured using a measuring tape, and the weight is recorded using a baby scale. Once the measurement values are obtained, they are immediately entered into the system and sent directly to the website. This process

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FIGURE 8. Tool Donation Submission

ensures accurate tracking of the baby's growth and development in real-time.

FIGURE 8, We provided the device for monitoring children's growth and development, with the expectation that it will serve as a valuable tool for tracking health data over time. Our hope is that the device will provide consistent and accurate data, helping to improve the quality of health monitoring in the community. Additionally, we look forward to receiving feedback from the users, such as healthcare workers and parents, to assess the tool's effectiveness and identify any areas for improvement. This feedback will be crucial for making adjustments and ensuring the tool remains useful for years to come.

FIGURE 9, The goal of the community service project titled "Application of Growth Monitoring System Web-Based to Monitor Growth of Toddlers" is to promote better monitoring of toddler growth while also advancing the use of Information Systems. This initiative aims to empower communities by enhancing their ability to access growth monitoring websites via smart devices. By increasing awareness about the importance of tracking growth in toddlers, the project seeks to encourage healthier practices and informed decision-making among parents and caregivers. Ultimately, it fosters an environment where technology plays a crucial role in improving child development and overall well-being.

V. CONCLUSION

The conclusion of the community service activity is the application of the Growth Monitoring System (GMS) tool to monitor the growth and development of toddlers based on the Web in several points:

A. IMPROVING THE SKILLS OF POSYANDU CADRES

This activity succeeded in improving the ability of posyandu cadres to use a web-based Growth Monitoring System (GMS) tool to monitor the growth and development of toddlers. Cadres are now more skilled in operating the tool, measuring weight and height, and inputting data into the system accurately and efficiently.

B. IMPROVED QUALITY OF HEALTH SERVICES

With the implementation of GMS, the quality of health services at posyandu has improved, enabling early detection of nutrition and stunting problems. The data collected in an integrated manner supports quick and appropriate interventions, so that toddlers who need special attention can get immediate treatment.

C. EFFECTIVE COLLABORATION BETWEEN HEALTH WORKERS AND PARENTS

The program strengthens the synergy between posyandu cadres, health workers, and parents. Parents are more aware of the importance of monitoring toddlers' health, and communication between cadres and parents is better with real-time access to child growth and development

FIGURE 9. Closing and group photo

data through a web-based system.

D. PROGRAM SUSTAINABILITY THROUGH TOOL HANDOVER

The handover of GMS tools to the posyandu ensures the sustainability of the program. The posyandu cadres now have adequate tools and skills to continue monitoring the growth and development of toddlers independently, so that the long-term benefits of this program can continue to be felt.

E. POSITIVE IMPACT ON THE COMMUNITY

The program has had a positive impact in increasing community awareness about the importance of monitoring the growth and development of children under five, as well as encouraging increased visits to posyandu. The use of technology in primary health care also supports stunting prevention efforts and improves children's welfare in the long run.

The following are suggestions from community service activities Implementation of the Growth Monitoring System (GMS) Tool for Monitoring Web-Based Toddler Growth and Development:

A. CONTINUOUS TRAINING FOR CADRES

It is recommended to conduct continuous training for posyandu cadres in the use of GMS. Periodic training can improve cadres' skills in tool operation and data analysis, so that they are better prepared to deal with various health situations that require further treatment.

2. INTEGRATION WITH THE LOCAL HEALTH SYSTEM

To optimize the benefits of GMS, it is recommended to integrate the system with the health services of puskesmas and local government. This allows for more extensive monitoring and better coordination between posyandu, puskesmas, and health offices in providing quick and appropriate health interventions.

3. PROCUREMENT OF ADEQUATE TOOLS

It is recommended that additional GMS tools be procured to reach more posyandu. With more tools available, the coverage of toddler growth and development monitoring can be expanded, so that more children can benefit from this monitoring system.

4. ACTIVE PARENT INVOLVEMENT

Parents need to be more involved in this program through more intensive education regarding the use of GMS and monitoring toddler growth and development. With active involvement, parents can be more aware of the importance of children's health and help ensure that the growth and development data is always updated properly.

5. SYSTEM EVALUATION AND DEVELOPMENT

It is recommended to continue to evaluate the use of GMS in posyandu, both in terms of technical and health monitoring results of toddlers. Feature development and quality improvement of the web-based system also need to be done so that this system remains relevant and more accessible to all parties involved.

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