E-POSYANDU for POSYANDU cadres report

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Abstract—**Google form application is used to create the POSYANDU (Integrated Services Post) application. The process of recording toddler health data is carried out in the POSYANDU cadre notebook, then the toddler health record data will be collected to RW (Rukun Warga). Furthermore RW will send the data to the Kelurahan. After that the record data will be moved by the POSYANDU Kelurahan data input staff into MS Excel. The MS Excel file will be sent via e-mail to the Indonesian Ministry of Health (Republic of Indonesia) and will be reprocessed into an application from the Ministry of Health. The purpose of this research is to create a POSYANDU application from the Google form that will be used by Posyandu cadres to report on toddler health conditions. Through the Google Form application, cadres no longer need to send notes to Kelurahan. Then from the Google Form application, Kelurahan staff can access the data inputted by cadres and the data can be exported then uploaded to the application from the health ministry. This google form application will be used to monitor the health of children aged 0 - 60 months in the Kelurahan.**

Keyword— POSYANDU, google form, google sheet, Posyandu cadres.

I. INTRODUCTION

Technology is developing very rapidly over time as offered by web-based application technology. Initially, if you want to create a web application, you need sufficient time and programming skills. But now to make an application simply click n click and the application is following what is desired. This application already has services such as web hosting, web design, web security, file collaboration and multi-platforms both on mobile devices and on computers [1][2]. Google is an engine search application that has now developed its technology in the direction of the cloud. The cloud application from Google is approved to drive Google, Google doc, Google meeting, Google class, and Google form [3]. Each Kelurahan has a health program implemented by each RT (Neighborhood Association) named POSYANDU (Integrated Service Center). Beginning POSYANDU was founded in 1980, every community can become a cadre of POSYANDU [4]. Posyandu cadres will be drilled and given basic knowledge of health. POSYANDU provides free health services for children and toddlers throughout the Kelurahan area. Through Posyandu the Indonesian government hopes to help the health of children under five from month to month [5]. POSYANDU will support the health of toddlers aged 0 - 60 months, which are the focus of POSYANDU activities are toddler nutrition, toddler bodyweight, vaccines, and encouraging toddler motor movements [6]. POSYANDU in Indonesia is a Village program that provides free toddler health checks. The POSYANDU program has issued assistance from the Indonesian community because every toddler who does not need to pay money to get his toddler to POSYANDU [7]. POSYANDU can run by the assistance not free from the help of POSYANDU cadres. POSYANDU cadres in the community voluntarily, and nothing is certain. POSYANDU cadres were trained in how to weigh toddlers, provide vaccines, prepare 5 healthy toddler foods, and also provide knowledge to prepare toddler motor skills [8]. Besides POSYANDU cadres every 1 month will provide services to every toddler who has been received in each RT. All data on toddler health and toddler development are recorded in the POSYANDU cadre notebooks. Then the toddler health record data will be collected to the RW after the health data is collected to the RW, then the RW will send the data to the Kelurahan. Furthermore, the POSYANDU cadre record data was transferred by the POSYANDU input data staff in the Kelurahan to MS Excel. After the POSYANDU cadre records the data inputted entirely by input staff from the Kelurahan then the MS Excel data will then be sent via email to the Indonesian Ministry of Health. MS Excel data will be reprocessed by the Ministry of Health by uploading MS Excel data to the application from the Ministry of Health. This is the long process of submitting toddler health data by POSYANDU cadres. With this question, a non-paid application from Google Form will be made that can be used by POSYANDU cadres. POSYANDU cadres make enough use of a smartphone to input toddler health data including toddler's weight and height. Then it can be seen by Kelurahan staff for verification, then Kelurahan staff can send data from the google form by downloading the findings from Google's drive then sending them to the Indonesian Ministry of the Republic of Indonesia. The Kelurahan staff no longer need to input data from the POSYANDU cadre.

II. STUDY LITERATURE

A. Health Post Program (Posyandu)

The Center for Integrated Services or Health Post Program (Posyandu) is a program from the Indonesian government in monitoring the health of early childhood from 0 - 60 months. Posyandu will focus on the health of infants to toddlers to monitor nutrition, health, and provide vaccines every month. The Posyandu program will be implemented by Posyandu cadres. The poyandu cadre was formed from Family Health Improvement (PKK) [9]. Usually, Posyandu cadres selected from PKK will get knowledge through training or health counselling from doctors at the village health centre. After these cadres get counselling, cadres are ready to become cadres in Posyandu [10]. The role of Posyandu cadres is the most important, in addition to helping to provide advice like a doctor to infants and toddlers, cadres must also include infant and toddler health

data in the notes that will be submitted to the Kelurahan to be used as information to the Indonesian government [11]. Every record is given by cadres to the Kelurahan, the data will be processed and the results will be sent to the Ministry of Health through the application. If Posyandu cadres enter data incorrectly, then the decision to be taken by the government will be incorrect. Because the data obtained from the cadres will be used by the government to monitor the nutrition of infants and toddlers throughout Indonesia to see the health of the next generation of the Indonesian nation. The following are examples of notes that Posyandu cadres must work on.

Fig.1. Children Data in Posyandu Territory (Real data form)

All infants and toddlers' data will be entered in the list as in Figure 1, the data will be filled by Posyandu cadres. Data entered into the list is data of infants and toddlers who come to Posyandu every month, for infants and toddlers who do not come then their health data will not be on the list. The data will be recapitulated by a team from the puskesmas and the results of the recapitulation data will be sent to the ministry of health for evaluation. Which villages have infants and toddlers who are classified as malnourished and how to overcome them? After the data is entered into a toddler data book, the book is collected and submitted to the village health centre. Then the village health centre will enter data into the MS Excel application. Then the MS Excel file will be sent to the Department of Health for reprocessing. This is what causes the process of recording the health of infants and toddlers to be a long process.

B.   Mobile Application

Mobile applications can do things like health mobile application which is used to monitor the health condition of patients [12], mobile applications to diagnose diseases, mobile applications to connect online with doctors and chat [13], mobile applications to view patient conditions, mobile applications for health such as pregnancy; baby's development; diet; and many more, a patient reminder application for taking medication, and also a mobile application for managing health insurance [14]. Many applications have been made for health such as health applications to predict diseases using artificial neural networks (ANN). This application releases a neural network to predict diseases and diagnose diseases in order to make decisions for follow-up [15].

C.   Google APPS

Google is a search application that has been widely used to search for information on the internet. But lately, Google created his latest work both from the cloud, the operating system is known as Android and the Google form application and also Google mail as well as many other technologies created by Google [16] [17].

Google Form is a free application from Google that can be used to create data input interfaces such as text, images, options, or menu lists on the Google Form feature [18] [19]. Besides, Google Form is also widely used as an application to retrieve information such as filling in questionnaires, where any data stored automatically will be stored on the Google Drive service called Google Sheets [1] [20]. Google application can also be used to collaborate between Google Forms with Google sheets [21]. So that applications on Google APPS can be used by multiple applications and do not need to think about making web hosting, this can save hosting and server maintenance costs.

III.   RESULT

Posyandu in each Kelurahan has similar procedures for handling infants and toddlers. Every Kelurahan must have rules and procedures according to the demands required by the Indonesian Ministry of Health. In the posyandu procedure research includes: Posyandu cadres will record new or old infants or toddlers. The data will be entered into e-posyandu applications that are built using applications from Google Form and Google Drive. Then the data of infants and toddlers will be stored until the age of five reaches sixty months or five years. After a five-year-old toddler, toddler data will be archived. The following is an illustration of the process of registering infants or toddlers, to the process of weighing, providing healthy food, and reporting baby and toddler data by posyandu cadres, the process can be seen in figure 2.
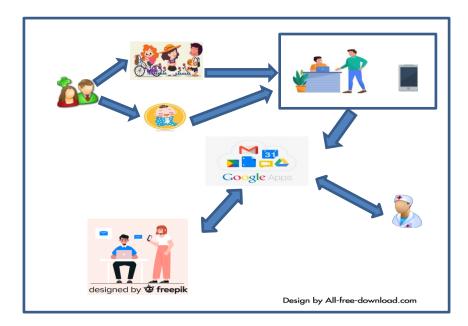
Fig.2. The Posyandu process for infants and toddlers

In the picture above the Posyandu procedure is illustrated. Initially, parents of infants or toddlers register data at the new Posyandu with requirements such as birth certificates, family cards, and also the parent or guardian identity cards. Furthermore, Posyandu cadres will record infants or toddlers, for new data will be included in the new e-Posyandu data, but for babies and toddlers who have registered will be entered in the form of weight, height. If at certain times babies and toddlers will be given a vaccine. Then doctors from the puskesmas will be at Posyandu in each Kelurahan. Applications for registering new baby and toddler data can be seen as shown in figure 3.
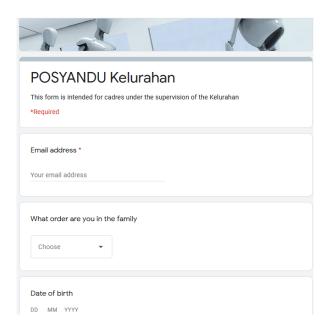

Fig.3. Google form new child data

In figure 3 there is a google form for new child data that is used to register newborn babies and toddlers or infants and toddlers who move domicile from outside the village. This Google form will record all infants and toddlers information as well as parents and infants' parent information. The data will be used by the kelurahan later to monitor the health of infants and toddlers from 0 - 60 months. Next, is the google form to enter the weight and height data of infants and toddlers who are already registered can be seen in the following figure.

Fig.4. Weight and Height Child Google form

In the form of a google application, the weight and height only contain 3 fields including Posyandu codes for parents and then the weight and height of infants and toddlers. Every baby and toddler who comes to Posyandu will be given health food such as rice, vegetables, milk, and beans. Then babies and toddlers will be weighed and their height measured by a doctor from the health centre. Furthermore, the Posyandu cadre will enter weight and height data into the Children's Weight and Height application. The next step is for every Posyandu cadre leader to recap the data in the Google Sheet application that has been provided. The following is an algorithm to calculate how many babies or toddlers are sick, babies or toddlers who are or are not there, then look at how many babies are gaining weight, having a fixed weight, and losing weight.

annotation :   u = age
               b = weight
               p = boy
               w = girl
               K = Count baby and child
               N = up weight
               weight = $if\ last\ weight = current\ weight\ \{\ same\ weight\ \}$
                           $else\ if\ last\ weight < current\ weight\ \{\ up\ weight\ \}$
                           $else\ if\ last\ weight > current\ weight\ \{\ down\ weight\ \}$

$$K = \{u \mid u\ equal\ and\ more\ than\ 0\ \&equal\ and\ less\ than\ 6\ \&\ p\} \tag{1}$$
$$K = \{u \mid u\ equal\ and\ more\ than\ 0\ \&equal\ and\ less\ than\ 6\ \&\ w\}$$
$$K = \{u \mid u\ equal\ and\ more\ than\ 7\ \&equal\ and\ less\ than\ 12\ \&\ p\}$$
$$K = \{u \mid u\ equal\ and\ more\ than\ 7\ \&equal\ and\ less\ than\ 12\ \&\ w\}$$
$$K = \{u \mid u\ equal\ and\ more\ than\ 13\ \&equal\ and\ less\ than\ 24\ \&\ p\}$$

$K = \{u \mid u \ equal \ and \ more \ than \ 13 \ \& equal \ and \ less \ than \ 24 \ \& \ w\}$

$K = \{u \mid u \ equal \ and \ more \ than \ 25 \ \& equal \ and \ less \ than \ 60 \ \& \ p\}$

$K = \{u \mid u \ equal \ and \ more \ than \ 25 \ \& equal \ and \ less \ than \ 60 \ \& \ w\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 0 \ \& equal \ and \ less \ than \ 6 \ \& p \ \wedge weight \}$ (2)

$N = \{u \mid u \ equal \ and \ more \ than \ 0 \ \& equal \ and \ less \ than \ 6 \ \& \ w \ \wedge weight\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 7 \ \& equal \ and \ less \ than \ 12 \ \& p \ \wedge weight\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 7 \ \& equal \ and \ less \ than \ 12 \ \& w \ \wedge weight\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 13 \ \& equal \ and \ less \ than \ 24 \ \& p \ \wedge weight\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 13 \ \& equal \ and \ less \ than \ 24 \ \& w \ \wedge weight\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 25 \ \& equal \ and \ less \ than \ 60 \ \& p \ \wedge weight\}$

$N = \{u \mid u \ equal \ and \ more \ than \ 25 \ \& equal \ and \ less \ than \ 60 \ \& w \ \wedge weight\}$
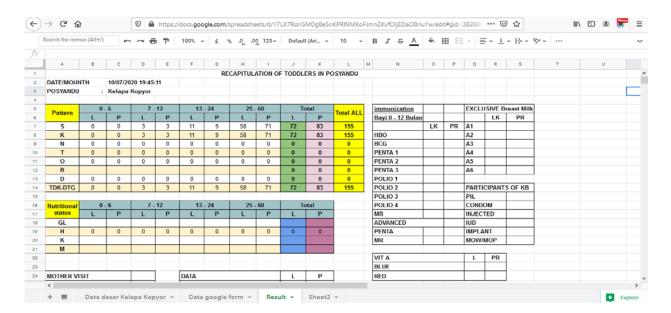

Fig.5. Recapitulation of toddlers in posyandu

As in Figure 5, there is information about infants and toddlers data. In addition, the picture above provides information and conditions on babies who experienced weight gain, weight loss and weight of babies and toddlers the same from the previous month. Then from the picture above, the Kelurahan can give instructions to the Posyandu cadres to pay attention to the population whose baby weight and toddler weight go down for 3 consecutive months by observing their parents' homes. Posyandu cadres will pay special attention to infants and toddlers who fall into the category of weight loss for three consecutive months later, cadres will help residents by providing nutritious food from the budget provided by the Kelurahan. This will help the government to monitor malnutrition for infants and toddlers in every Kelurahan across Indonesia. This will be a concern for the government of the Republic of Indonesia.

IV. CONCLUSIONS

The E-Posyandu application is built on Google forms and Google sheets in the Google Apps application. Can provide the information needed by posyandu and Kelurahan cadres. Reports that originally had to be made from Posyandu cadre notes after the E-Posyandu application was made, Posyandu cadres no longer needed to write on the Posyandu report book, but only had to fill in the e-Posyandu using their mobile phones and stored data. At this time the Kelurahan no longer needs to enter data from the Posyandu cadre records, but the Kelurahan only downloads input data from the Posyandu cadre on the Google sheet available from the Google form. This makes the Kelurahan can immediately see the condition of its citizens. The Kelurahan can also find out the number of healthy residents who are malnourished and malnourished so that the Kelurahan can assist families in need.

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