

## Supplemental Materials

Supplemental Table 1. FGD results of CHWs, Mothers activities and list of mobile health application features

Theme	Key insight	Noteworthy quotes
1. End-user activities	a. The direct use of CHW's notebook for MCH service	"The paper notebook can be used to document mothers' attendance immediately. The data of 5 years old children is also written in the notebook; the three years old children's data is also written. However, it is not in an orderly manner."
a. CHWs' activities	b. Delay in rewriting to the <i>Posyandu</i> information system (PIS) book	"After that, we have to write the names to the <i>Posyandu</i> information system book in an orderly manner."
	c. PIS book is extremely hard to implement	"If the data is to be written immediately to the PIS as the mothers come, it will make my head blown (because it is) confusing."
b. Mother's activities	a. Mothers who work will ask others to bring their children to <i>Posyandu</i> :	"For example, this (child), the child is taken care of by another person (because) the mother is working"
	i. babysitter	"Yes, nowadays it is the grandmother who
	ii. grandmother	takes care of the baby, not the mother."

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<ul style="list-style-type: none"> <li>iii. neighbor</li> </ul>	<p>“Or maybe the child is taken care of by the neighbor or other family members.”</p>
<p>2. The needs of mobile app</p> <ul style="list-style-type: none"> <li>• Monitoring babies, under-five-children, and mother</li> </ul>	<p>“With Posyandu, it is possible to check the development of children, examine pregnant mothers, immunization.”</p>
<ul style="list-style-type: none"> <li>a. CHW</li> </ul>	<ul style="list-style-type: none"> <li>• CHW needs a mobile app to report to <i>Puskesmas</i></li> </ul> <p>“It is like a tool, but it can be re-accessed, like archive. Because we need it when <i>puskesmas</i> requests (a report), sometimes it can be accessed again”</p>
<ul style="list-style-type: none"> <li>b. Mother</li> </ul>	<ul style="list-style-type: none"> <li>• Mother needs mobile app to monitor their under-5 children</li> </ul> <p>“(We) need to know our child development so that we can monitor by ourselves for our child”</p> <p>“Yes, so we can privately look at it. So, we do not have to ask the CHW, “I want to see my son’s data, so how?” It is just not practical”</p>
<ul style="list-style-type: none"> <li>• Login</li> </ul>	
<p>3. Main list of features</p>	<p>“First, we click on Posyandu app, then we register in it, after that we click it once more,</p>

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- 12-Month Reporting Format then we are connected to our children's data"  
"So, there should be a 12-month format in
  - Similar with reporting the reporting form to know whether the form used in Puskesmas weight of the baby increases or decreases"  
"So, the format is similar with the PIS, but the mobile version is much more
  - Baby data input to be organized."  
automatic data when the app is re-opened "It would be better if the date can be automatically sorted so it will not be a hassle to find the baby's date of birth like, "Oh, this baby was born on such date, this one on such date". It would be easier if (the app) can automatically sort it alphabetically when we enter the contact."
  - Child growth graph "The satisfactory (growth graph) is the green one, right? This yellow one means that it is below (average)"...which is at least there is this graph, not for the toddler's overall graph"
  - Automatic alert of child growth "Excuse me, ma'am, there is a bit feedback for that point, if it is possible, the increase
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and decrease status to be automatic. For example, last month (the child's weight) was such number, this month it's such number, so that number to automatically appear”

Supplemental Table 2. Use of Posyandu mHealth application by CHW

No	Theme	Key Insight	Noteworthy Quotes
1	Under-five Data Input	<p>a. Under-five body weight measurement</p> <p>b. Under-five body height measurement time</p> <p>c. Under-five body height measurement according to WHO</p>	<p>“Monthly weight data is automatically noted.”</p> <p>“We do not measure the height monthly, only on several months.”</p> <p>“The measurement method is by lying (the child) down or standing up.”</p>
2	Under-five Data Display	a. Under-five data can be accessed anytime	“So, every month is like the last month, for example, a baby is measured in January, in February he/she is measured as well, then the February report will appear when we click the child's name.”

		<p>b. Under-five measurement result display</p> <p>c. Parents can access under-five data</p>	<p>“So, when all the data has a result, will the graph appear?”</p> <p>“Sometimes the parents are like, ‘ma’am does my baby’s weight increase or not?’, then we can show the data in the application.”</p>
3	<p><i>Posyandu</i> Mobile app Components</p>	<p>a. <i>Posyandu</i> mobile app menu</p> <p>b. Online report</p>	<p>“There are baby’s names, the ups and downs of under-five data, pregnant mothers, breastfeeding mothers, etc.”</p> <p>“We want it to be like (..) online reporting, so we do not need to measure the number of decreases.”</p>
4	<p>Benefits of <i>Posyandu</i> Mobile app</p>	<p>a. <i>Posyandu</i> reporting and recording is easier</p> <p>b. Ease cadre’s duties in <i>Posyandu</i></p>	<p>“Directly input the data, enter the data so that the report will be directly submitted to <i>Puskesmas</i>.”</p> <p>“So, the recording division does not need to note manually to the SIP book, but the input can be done through the application.”</p>

5	Cadre's obstacle in using <i>Posyandu</i> mobile app	<p>a. Confused/need to adapt</p> <p>b. Unsupportive <i>Posyandu</i> situation</p>	<p>“A while ago, some data was successfully stored, but some were unsuccessful.”</p> <p>“During <i>Posyandu</i> working day, it will remain crowded so that the data entry will be done after the end.”</p>
6	Learning process	<p>a. Cadre's knowledge of <i>Posyandu</i> mobile app</p> <p>b. Cadre's skills on the use of <i>Posyandu</i> mobile app</p> <p>c. Cadres need more training</p>	<p>“We were trained; one post held the tool. We received training to enter the data.”</p> <p>“We think that we can use it because we are used to using and playing with a handphone. However, before that, the application should be made available first.”</p> <p>“When it is time to learn, all of us should be gathered like training.”</p>
7	<i>Posyandu</i> mobile app guidebook	<p>a. Significance of <i>Posyandu</i> mobile app guidebook</p> <p>b. Guidebook format</p>	<p>“A guidebook is necessary because we often forget things.”</p>

		<p>c. Guidebook size</p> <p>d. Guidebook writing style</p> <p>e. Images in the guidebook</p>	<p>“A small format is appropriate” (while the woman pointed at an A5 paper)</p> <p>“The letters should not be too small.”</p> <p>“The writing should be black and white.”</p> <p>“If the writing is black and white, the images should be colored.”</p>
8	Information in the guidebook	<p>a. Instruction</p> <p>b. How to register an account/log in</p> <p>c. How to input Under-five data</p> <p>d. How to input pregnant mother data</p>	<p>“In the manual guidebook, there should be instruction and screenshot.”</p> <p>“Such as how to do login and accompanied by a screenshot beside.”</p> <p>“For example, if we want to input toddler data, we should click this if we want to add it.”</p> <p>“Usually, pregnant mother data has a record on the number of children.”</p>
9	Cadre’s hopes	<p>a. Tablet/HP provision</p>	<p>“Yes, if there are three <i>Posyandu</i> in a village then there should be three (tablet/HP) in a village.”</p>

		b. Use of application in <i>Posyandu</i>	“If using the application if possible, then so be it, (I) cannot wait to use it.”
10	Cadre’s concerns	a. Internet quota availability	“Well, <i>Posyandu</i> does not have the budget, I asked the villagers about the internet quota fee, and they already shook their heads.”

Supplemental Table 3. Knowledge questionnaire about the Posyandu app

No	Question	Answer	
		Correct	Incorrect
<b>Account management</b>			
1.	Before using the Posyandu application, the cadre must register their account first		
2.	The option to register a Posyandu app account is available as a cadre and as a parent		
3.	The cadre biography must be filled in the format available when registering an account on the Posyandu application		
4.	If you have registered an account, the cadre can simply		

	log in if they are going to use the Posyandu application		
5.	An internet connection is required to be available in using the Posyandu application,		
<b>Posyandu application advantages</b>			
6.	The Posyandu application helps the cadres in carrying out Posyandu activities, especially for recording and reporting		
7.	Posyandu application contains health information for infants and toddlers and pregnant women		
8.	In addition to the cadres, the Posyandu application can also be used by mothers with babies and toddlers		
<b>Pregnant women data</b>			
9.	Pregnant women data on the application contains the mother's identity and weight of the mother pregnancy		
10.	To make it easier for the cadres to find data on pregnant women		

	who are already in the application, the names of pregnant women shall use the alphabetical order		
11.	Data of pregnant women who are not yet included in the Posyandu application can be added to the application		
<b>Pregnant women inspection results</b>			
12.	Data on pregnant women contains the results of examinations of pregnant women such as gestational age, weight of pregnant women, and height of pregnant women		
13.	Displaying the results of examinations of pregnant women in the application can be done at any time, outside the Posyandu schedule		
14.	The results of the examination of pregnant women in the previous month can be seen in the data menu of the results of		

	pregnant women examination by date		
15.	Prescription of iron supplement pills needs to be included in the examination results on the Posyandu application		
<b>Under-five Data</b>			
16.	All infants and toddlers in the Posyandu area must be included in the Posyandu application data		
17.	To children's data on the baby and toddler's data menu, it is required to include the parents' name		
18.	Toddler data recording on the Posyandu application is carried out until the child is more than 5 years old		
19.	Data on infants and toddlers are entered in the same menu as pregnant women data		
<b>Inspection Results on under-five</b>			
20.	In addition to the child's weight, the child's height is also		

	included in the infant and toddler data in the application		
21.	Exclusive breastfeeding data and administration of vitamin A are included in the results of examinations for infants and toddlers		
22.	Weight gain for infants and toddlers can be seen on the weight gain graph in the application		
<b>Posyandu Information System</b>			
23.	Posyandu Information System (PIS) has 6 formats available in the application		
24.	The PIS format is filled at the beginning and end of the year, not every month		
25.	After completing the application's Posyandu data, it can be reported immediately		

Supplemental Table 4. Posyandu application use observation sheet

No.	Activities	0	1	2
1	<b>Registering account:</b>			

	- Press the 'register' button on the home screen display			
	- Press the 'register as a cadre' button			
	- Fill in Posyandu data which includes Province, Regency / City, District / Sub-district, Puskesmas and Posyandu			
	- Fill in personal account data in the available fields (full name, place of birth, date of birth and address)			
	- Fill in the data account by entering the phone number and password			
	- Confirm password with the same password			
	- Press the 'send registration' button on the screen			
<b>2</b>	<b>Log in to the application</b>			
	- Press the 'log in' button on the home screen			
	- Fill in the telephone number used when registering an account			
	- Fill in the password used when registering an account			
	- Press the 'log in' button on the screen			
<b>3</b>	<b>Fill in under-five data</b>			
	- Press the 'baby and toddler' menu on the home screen			

	- Press the '+' button in the lower right corner of the screen (baby and toddler data fields)			
	- Fill in the data of infants and toddlers in the infant and toddler register column (child's name, date of birth, child to, sex, NIK/Identity Number, birth weight in kilograms, father's name, mother's name, mother's NIK/Identity Number, telephone name, address, RT, RW)			
	- Press the save button			
<b>4</b>	<b>Displays data on under-five</b>			
	- Press the 'baby and toddler' button on the home screen			
	- Choose the name of the baby / toddler who wants to know the data			
	- Pressing baby / toddler names in the baby and toddler register column in the Posyandu area			
<b>5</b>	<b>Looking for under-five data</b>			
	- Press the 'search' button in the top left corner of the baby and toddler register column			
	- Write the name of the baby / toddler you are looking for in the search field			

	- Press the search button in the lower right corner on the keyboard screen			
<b>6</b>	<b>Fill in under-five examination data</b>			
	- Press the 'Posyandu' menu			
	- Press the plus button (+) in the lower right corner of the screen in the baby and toddler data column			
	- Fill in infant and toddler data in the infant and toddler register column (baby / toddler name, check date, weight in kilograms, height in centimeters, measurement method, immunization, early breastfeeding initiative, exclusive breastfeeding, vitamin A for February/August, MCH book, PMT and diarrhea)			
	- Press the 'save' button on the screen to save the data			
<b>7</b>	<b>Display under-five data</b>			
	- Press the 'Posyandu' menu			
	- Press the inspection date			
	- Press the name of the baby / toddler who wants to know the data of the results of the examination			
<b>8</b>	<b>Fill in the data of pregnant women</b>			

	- Press the 'pregnant woman' menu on the home screen			
	- Press the plus button (+) in the lower right corner of the screen in the data column of pregnant women			
	- Fill in the data of pregnant women (name of pregnant women, husband's name, Identity Number of mother and husband, date of birth of mother, address, telephone number, weight during pregnancy)			
	- Press the 'save' button on the screen to save the data			
<b>9</b>	<b>See data on pregnant women</b>			
	- Pressing the menu of pregnant women on the home screen			
	- Pressing the name of the pregnant woman available in the data column of pregnant women			
<b>10</b>	<b>Looking for data on the results of examinations of pregnant women</b>			
	- Press the search button in the upper left corner of the home screen			
	- Fill in the name of the pregnant woman who wants to know the results of the examination			

	- Press the search button in the lower left corner of the keyboard screen			
11	<b>Log out of the application</b>			
	- Press the 'log out' button in the upper right corner on the home screen			

Description: Filling Instructions

Put a check mark in the column provided, in accordance with the steps / tasks undertaken by the cadre

- 1 : If it is not performed
- 2 : If it is performed with hesitation
- 3 : If it is performed with confidence