

Digital Transformation of Posyandu Services through an Android Application for Stunting Prevention: A Case Study of Posyandu Dahlia, Bahagia Village, Bekasi

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Abstract

Maternal and child health records at Posyandu Dahlia, Bahagia Village, Bekasi, were still kept by hand, which slowed administrative work and made it difficult to follow children's growth over time. This community service program introduced an Android-based application to digitize Posyandu services, with the aim of helping health cadres record data, speeding up reporting, and improving the management of health information. Twenty participants took part, consisting of Posyandu cadres, a village midwife, and parents of young children. The program comprised a needs assessment, socialization, two days of hands-on training, eight months of field mentoring delivered in eight monthly sessions, and an evaluation based on a pre-test, a post-test, and a satisfaction questionnaire. The mean participant score rose from 33 on the pre-test to 90 on the post-test. With the application, cadres were able to record maternal and child data more quickly and consistently, and monthly reports became easier to compile. Participants rated the program highly, with mean scores of 4.6 to 4.9 on a five-point scale for the relevance of the material, ease of use, quality of mentoring, and overall benefit. The Android application supported the digital transformation of Posyandu services by strengthening cadre capacity and bringing more order to health data management, which in turn can support the quality of primary health services in Bahagia Village, Bekasi.

Keywords: android application, digital transformation, health cadres, posyandu, stunting prevention

Introduction

The Posyandu (Pos Pelayanan Terpadu, or integrated health service post) is a community-based health service that monitors the health of mothers and children, in particular the growth and development of children under five, so that nutritional problems and stunting can be detected early. Effective monitoring depends on continuous, accurate, and accessible records of each child's growth. In many Posyandu, however, records are still kept manually, which leaves room for recording errors, lost data, and late reporting, all of which can delay the detection of stunting risk. Digital systems offer a way to make recording more efficient, data more accurate, and growth monitoring more reliable (Kania et al., 2026; Yanti & Ramayanti, 2025).

Beyond growth monitoring, the Posyandu supports a range of public health programs, including maternal and child health services, family planning, immunization, nutrition

improvement, and the prevention and control of diarrhoea. Under the integrated Posyandu concept, it may also offer additional services according to local needs, which makes its role in primary care broader and more sustained (Mulyana et al., 2022). This role is all the more important because stunting remains a public health problem in Indonesia. The 2024 Indonesian Nutritional Status Survey (SSGI) placed national stunting prevalence at 19.8%. Although this is lower than in the previous year, it is still above the national target, so accelerating stunting prevention remains a government priority (Kementerian Kesehatan Republik Indonesia, 2025). In Bekasi Regency, the 2023 Indonesian Health Survey (SKI) recorded a prevalence of 23.2%, higher than the West Java average of 21.7% (Badan Kebijakan Pembangunan Kesehatan, 2023), which calls for stronger preventive efforts, including better Posyandu services and growth monitoring systems.

Stunting is a condition of impaired growth caused by chronic undernutrition over a prolonged period, which affects both physical growth and cognitive development (Kementerian Kesehatan Republik Indonesia, 2022). It is a multidimensional problem shaped by several interrelated factors, among them inadequate nutritional intake, recurrent infections, the health and nutritional status of mothers during pregnancy, poor sanitation and hygiene, and limited access to health services. Prevention therefore requires a comprehensive approach: better nutrition, better maternal and child health services, regular growth monitoring, and stronger health recording and reporting systems as a basis for decision-making. Because stunting affects the future productivity and competitiveness of the nation, its prevention has been designated a national priority (Sekretariat Wakil Presiden Republik Indonesia, 2024). The Posyandu contributes through growth monitoring, nutrition education, supplementary feeding, and support for pregnant women and families with young children. Yet Posyandu services in many areas still face obstacles, especially in data management and administration. Most health records are written in register books, which increases the risk of errors and data loss and makes reporting and evaluation difficult (Aprilya & Dian, 2025).

Posyandu Dahlia, located in Bahagia Village, Babelan District, Bekasi Regency, faces the same problems. Observations and discussions with its cadres showed that data on children, pregnant women, and services were still entered by hand in register books. This created several difficulties: retrieving a child's examination history took considerable time, records were at times duplicated or inconsistent, reports to the community health centre (Puskesmas) were often late, and it was hard to trace a child's growth and development over time. The cadres also had limited experience in using information technology for data management and administration. As a result, data handling was inefficient, the information produced was of limited quality, and growth monitoring and the early identification of nutritional risk could not be carried out quickly or systematically (Yanti & Ramayanti, 2025).

Advances in information technology open considerable room for improving community health services through the digitization of Posyandu activities. An Android-based information system can help cadres record data digitally, store it centrally, monitor children's nutritional status, and prepare reports more quickly and accurately. Digitization can also make services more effective and strengthen data-driven decisions in stunting prevention (Yoraeni et al., 2022). Earlier programs have shown that digital Posyandu information systems improve the efficiency of data management, make health information easier to access, and raise the quality of services. Android applications are considered especially practical because they run on mobile phones that cadres and community members already use (Nugroho et al., 2025).

Whereas most earlier programs focused only on digitizing records, the application introduced here also includes features for recording maternal and child data, monitoring nutritional status from anthropometric measurements, tracking immunization history, generating automatic summaries and reports, and keeping a continuous record of each child's growth. These features allow cadres to follow children's condition more quickly and accurately, with proper documentation, so that children at risk of stunting can be identified earlier. Against this background, the program aimed to bring about the digital transformation of Posyandu services through the implementation of an Android application at Posyandu Dahlia, Bahagia Village, Bekasi. It was expected to improve the cadres' ability to use information technology, strengthen the management of maternal and child health data, and support stunting prevention in a more effective, efficient, and sustainable way.

Method

Implementation Stages

The program was carried out in six stages, as shown in Figure 1.



Figure 1. Stages of the community service program

Source: Program implementation team (2026)

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Program planning

The team first assessed the partner's needs in order to identify the problems, potential, and development priorities of the Posyandu. Data were gathered through direct observation, semi-structured interviews, a focus group discussion (FGD) with Posyandu cadres and the village midwife, and a review of register books, recording formats, and activity reports. Observation was used to map the service flow and the existing data management process, while the interviews and FGD explored the obstacles faced by the partner, user needs, and expectations of the planned system. The results were analysed descriptively to rank the problems that the program would address.

Organization and preparation

Tasks and responsibilities were divided among team members according to their expertise. The team then coordinated with the partner, namely the manager of Posyandu Dahlia, the village midwife, and the Bahagia Village office, to agree on the schedule, the format of activities, and the role of each party. Preparation covered the training module, socialization materials, the pre-test and post-test instruments, the satisfaction questionnaire, and a user guide for the Android-based Posyandu information system. The team also prepared smartphones, laptops, internet access, and user accounts, and tested every feature of the system before it was introduced. A final round of coordination with the partner confirmed the readiness of participants, venue, and supporting facilities.

Program implementation

The program ran for eight months, from April to November 2026, at Posyandu Dahlia, Bahagia Village, Babelan District, Bekasi Regency. It opened with a field survey and coordination with the partner to confirm needs and problems and to set the schedule. The survey results were used to prepare the training materials and to adjust the features of the Android application to the partner's needs. This was followed by socialization and a two-day training (six hours per day) for 20 participants consisting of Posyandu cadres, a village midwife, and parents of young children. The training covered effective and efficient Posyandu management, the use of the Android application for recording and reporting Posyandu services, and the management of maternal and child health data. After the training, the team provided intensive mentoring through eight face-to-face sessions, one each month, supplemented by online consultation and monitoring as needed. Mentoring focused on using the application in day-to-day Posyandu operations, building the cadres' skills in digital data management, resolving technical problems, and enabling the cadres to use the system independently.

Monitoring and evaluation

Implementation was monitored regularly to keep activities on schedule and to identify problems as they arose. Program effectiveness was evaluated against predefined indicators, including participation, changes in practice, and the achievement of program objectives. Changes in knowledge and understanding were measured with a pre-test and post-test consisting of 20 multiple-choice questions with four options each (A–D). Each correct answer scored 5 points and each incorrect answer 0, giving a score range of 0 to 100. The test covered five aspects: (1) Posyandu data management; (2) understanding and use of the Android-based Posyandu information system; (3) administration and digital archiving; (4) knowledge of

stunting prevention through maternal and child health monitoring; and (5) the use of digital media to disseminate health information to the community. Participant satisfaction was measured with a questionnaire on a five-point Likert scale. Data from observation, the tests, documentation, and the questionnaire were analysed descriptively by comparing mean scores and percentage gains before and after the training, and the results are presented in tables, figures, and narrative form.

Reporting

The team prepared a final report covering every stage of the program, the results achieved, the obstacles encountered, and recommendations for further work. The results were then shared with the relevant parties, including the local government, the Puskesmas, and the partner Posyandu, both to disseminate the outcomes and to gather feedback for improving and sustaining the program.

Follow-up and sustainability

After the program ended, the team continued to follow how the application was used in order to assess its lasting effect and to plan further development, so that the benefits would continue beyond the formal program period.

Results

Partner Profile

The partners in this program were people directly involved in maternal and child health services at the Posyandu. Twenty participants took part, as shown in Table 1. Parents of young children made up the largest group (55%), followed by Posyandu cadres (40%) and one village midwife (5%). Initial observation showed that most participants still relied on manual records for data on children, pregnant women, and Posyandu activity reports.

Table 1. Profile of Program Participants

Participant group	Number (persons)	Percentage (%)
Posyandu cadres	8	40
Village midwife	1	5
Parents of young children	11	55
Total	20	100

Source: Program data (2026)

Program Implementation

The program began by identifying the partner's needs in managing Posyandu data. Participants were then trained to use the Android-based Posyandu information system, covering data on children and pregnant women, nutritional status, immunization records, and digital health reports. After the training, they received mentoring in operating the system during regular Posyandu activities (Figure 2).



Figure 2. Training on the Android-based Posyandu information system
Source: Program documentation (2026)

Participant Knowledge

Knowledge was measured with the pre-test and post-test described above. The mean score rose from 33 to 90, a gain of 57 points or 172.73% (Table 2).

Table 2. Pre-test and Post-test Results

Indicator	Mean score
Pre-test	33
Post-test	90
Increase	172.73%

Source: Program evaluation data (2026)

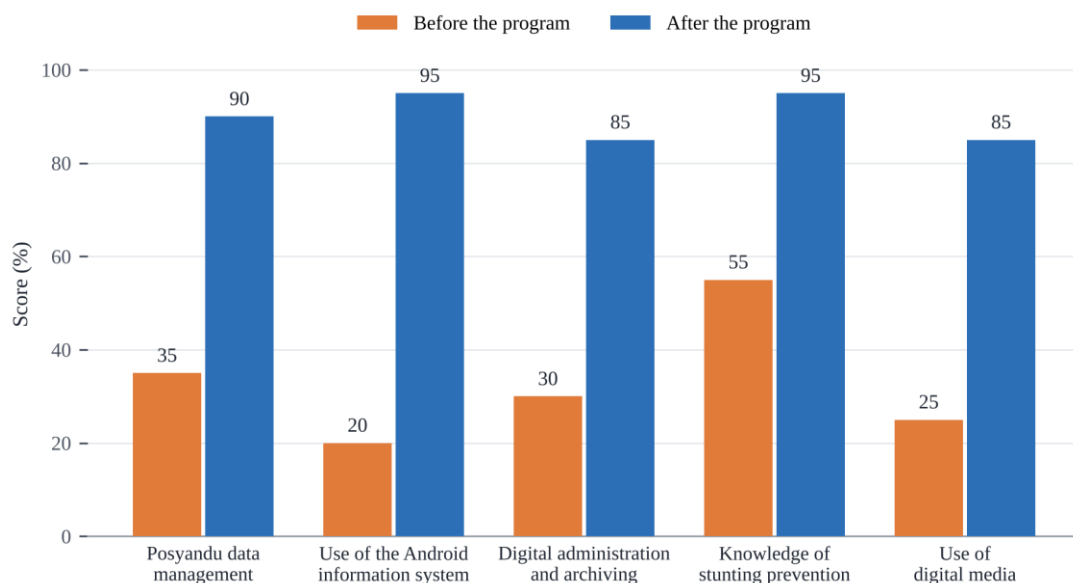


Figure 3. Partner capability before and after the program, by aspect
Source: Program evaluation data (2026)

Scores improved on all five aspects measured (Figure 3). The largest gains were in the use of the Android information system (from 20 to 95) and the use of digital media (from 25 to 85), both areas in which participants began with little experience. Knowledge of stunting prevention started from a higher base (55) and reached 95. Taken together, these results indicate that the training and mentoring strengthened the cadres' ability to use information technology in managing and delivering Posyandu services.

Participant Satisfaction

Satisfaction was measured on a five-point Likert scale. As Table 3 shows, participants rated every aspect highly, with mean scores between 4.6 and 4.9. Overall benefit received the highest rating (4.9), while ease of use received the lowest (4.6), suggesting that some participants still needed time to become comfortable with the application.

Table 3. Participant Satisfaction with the Program

Aspect	Mean score (1–5)
Relevance of the material	4.7
Ease of use of the system	4.6
Quality of mentoring	4.8
Overall benefit	4.9

Source: Participant questionnaire (2026)

System Implementation

Once the system was in place, Posyandu data management became more structured. Data on children, pregnant women, nutritional status, and immunization history are now stored in a database, which makes records easier to search and update. Activity reports can be generated automatically, which shortens the time spent on administration. Table 4 compares conditions before and after implementation, and Figure 4 shows the application interface.

Table 4. Conditions before and after System Implementation

Aspect	Before the program	After the program
Posyandu data management (%)	35	90
Use of the Android information system (%)	20	95
Administration and digital archiving (%)	30	85
Report preparation	Manual	Automatic
Monitoring of child data	Limited	More structured

Source: Observation and program evaluation data (2026)

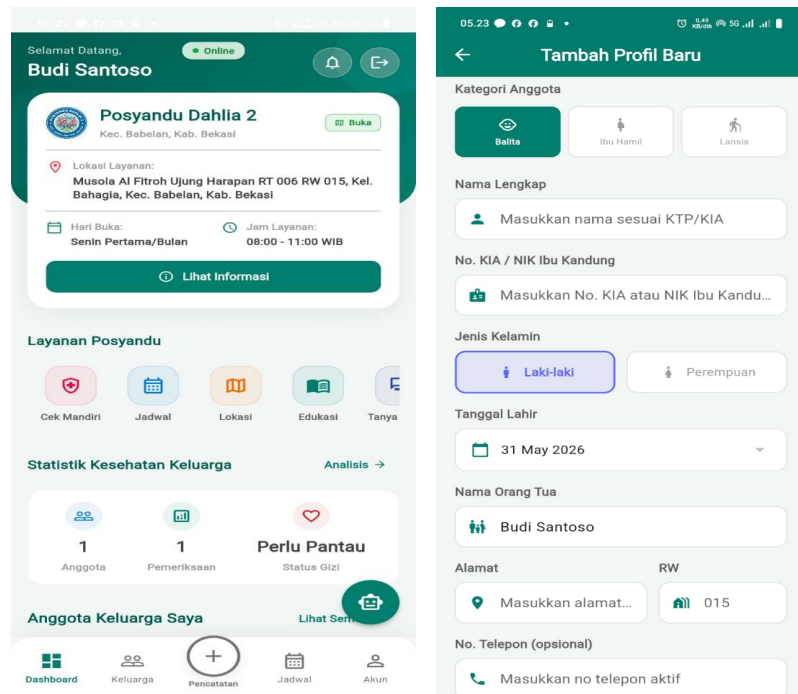


Figure 4. Interface of the Android-based Posyandu information system
Source: Posyandu information system documentation (2026)

Discussion

The implementation of the Android-based Posyandu information system shows that digital technology can strengthen the capacity of cadres to carry out their public health duties. Because the training and mentoring gave participants direct, hands-on experience with the system, knowledge was transferred more effectively than it would have been through explanation alone. Practice-based learning of this kind made it easier for participants to bring the new technology into their everyday work.

The marked improvement in participants' scores also suggests that the system is reasonably easy to use. The Technology Acceptance Model holds that perceived ease of use and perceived usefulness are the main factors in whether people accept a new technology (Davis, 1989). When a tool clearly makes work easier and brings visible benefits, users are more willing to keep using it. This was evident in the program: after training and mentoring, participants were able to operate the system on their own, and they rated its benefit (4.9) even more highly than its ease of use (4.6).

These findings are in line with Mulyana et al. (2022), who reported that a web-based Posyandu information system made community health data management more effective. Digital systems allow records to be entered and stored in a more orderly way than conventional register books, reduce the risk of data loss, and make it faster for cadres and health workers to find the information they need.

The level of acceptance among participants indicates that the application matched the operational needs of the Posyandu. This supports Aprilya and Dian (2025), who found that the success of a health information system depends not only on the quality of the technology but

also on how well its features fit what users actually need. Systems that are simple, easy to understand, and able to solve everyday administrative problems are accepted more readily.

From a service perspective, the system supports the monitoring of children's growth and development. With digital records, nutritional status, immunization, and health history can be documented more systematically, which helps in the early detection of health problems and in continuous monitoring. Yanti and Ramayanti (2025) reached a similar conclusion, showing that a Posyandu application improved the monitoring of children's nutrition and thereby supported stunting prevention.

The program also illustrates how digital transformation can raise the quality of public services at the community level. Information systems make data more accurate, better documented, and easier to retrieve when needed. This is consistent with Yoraeni et al. (2022), who found that information systems in village public services improve service effectiveness and support data-driven decisions.

Some obstacles nonetheless emerged during implementation, mainly because participants differed in their familiarity with information technology. Several cadres needed more time to learn the features of the system. Continued use also depends on the availability of suitable devices and a stable internet connection. Continued mentoring and support from the village government, the Puskesmas, and the Posyandu management will therefore be needed for the system to be used well over the long term.

Several limitations should also be noted. The program involved only 20 participants, so its results cannot be generalized to all Posyandu. The evaluation covered a relatively short period and cannot yet show whether the system will continue to be used or how service performance will change over time. The program did not measure effects on child health indicators, such as changes in nutritional status, the number of at-risk children identified, or referral follow-up. Implementation also depends on the devices cadres own and on a stable internet connection, which may be a constraint in areas with poor coverage.

CONCLUSION

Training and mentoring in the use of an Android-based Posyandu information system improved the ability of Posyandu cadres to manage maternal and child health data digitally and contributed to better Posyandu services. The system made recording, storage, retrieval, and reporting easier, so that health data are now handled in a more effective and structured way, and it provides more accurate and better documented information as a basis for service decisions. Sustained commitment from the Posyandu management, the village government, and the Puskesmas is needed to ensure that the system continues to be used. Further work should add more complete features, improve compatibility with a wider range of devices, continue mentoring and evaluation, and assess the effect of the system on child health outcomes, so that its benefits for digital community health services can be extended.

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