COMMUNITY-BASED TRAINING ON VISUAL COMMUNICATION MEDIA FOR GROWTH AND DEVELOPMENT MONITORING IN EARLY CHILDHOOD

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ABSTRACT

Monitoring child growth and development at the community level is essential for the early detection of growth delays and developmental disorders. However, many Posyandu cadres still face difficulties in interpreting growth indicators due to limited technical training and the absence of effective visual media. This community service program aimed to improve the competence of Posyandu cadres in monitoring child growth and development through training on the use of visual aids. The program was implemented at the Tahtul Yaman Public Health Center, Jambi City, involving 30 cadres from 12 community health posts. The activities included needs assessment, development of flipcharts and posters, training and simulation sessions, field implementation, and evaluation. The results showed a significant improvement in cadres' knowledge, with the mean score increasing from 55 (pre-test) to 82 (post-test), representing a 49% increase. Participant feedback indicated high satisfaction, and the use of visual aids facilitated better understanding and interaction during health education sessions. This program demonstrates that visual-based participatory training effectively enhances cadres' knowledge, confidence, and communication skills, and can be replicated to strengthen community-based early detection and stunting prevention programs.

Keywords: *posyandu cadres, visual aids, child growth monitoring, community empowerment, nutritional epidemiology*

ABSTRAK

Pemantauan tumbuh kembang anak di tingkat komunitas sangat penting untuk deteksi dini keterlambatan pertumbuhan dan gangguan perkembangan. Namun, banyak kader Posyandu masih mengalami kesulitan dalam menginterpretasikan indikator tumbuh kembang karena keterbatasan pelatihan teknis dan tidak tersedianya media visual yang efektif. Program pengabdian kepada masyarakat ini bertujuan untuk meningkatkan kompetensi kader Posyandu dalam memantau tumbuh kembang anak melalui pelatihan penggunaan alat bantu visual. Kegiatan dilaksanakan di Puskesmas Tahtul Yaman, Kota Jambi, dengan melibatkan 30 kader dari 12 Posyandu aktif. Rangkaian kegiatan meliputi analisis kebutuhan, pengembangan flipchart dan poster, pelatihan serta simulasi, implementasi lapangan, dan evaluasi. Hasil menunjukkan adanya peningkatan signifikan pada pengetahuan kader, dengan nilai rata-rata meningkat dari 55 (pre-test) menjadi 82 (post-test), atau peningkatan sebesar 49%. Umpan balik peserta menunjukkan tingkat kepuasan yang tinggi, dan penggunaan media visual mempermudah pemahaman serta interaksi selama kegiatan edukasi kesehatan. Program ini membuktikan bahwa pelatihan partisipatif berbasis media visual efektif dalam meningkatkan pengetahuan, kepercayaan diri, dan keterampilan komunikasi kader, serta dapat direplikasi untuk memperkuat program deteksi dini dan pencegahan stunting berbasis masyarakat.

Kata kunci: *kader Posyandu, alat bantu visual, pemantauan tumbuh kembang, pemberdayaan masyarakat, nutritional epodemiology*

INTRODUCTION

Monitoring the growth and development of children in early childhood is crucial for their overall health, well-being, and future success. Research indicates that early childhood educators play a pivotal role in this process by providing necessary stimulation and conducting routine evaluations of children's physical parameters, such as weight and height, to prevent issues like stunting and malnutrition [1–3]. Consistent monitoring allows for the identification of deviations from typical growth trajectories, which is critical during the "golden age" of development when interventions can be most effective [2,4]. While educators may face obstacles, such as insufficient knowledge and lack of anthropometric measurement tools, ongoing training and education can enhance their capabilities and improve outcomes for children [1,5]. Furthermore, the implementation of digital

tools, such as dedicated applications for tracking growth, has demonstrated effectiveness in facilitating parental engagement and comprehensive monitoring of children's development [6,7].

The implications of robust monitoring practices during early childhood extend beyond immediate physical health, influencing long-term educational and social outcomes. For instance, cognitive and social-emotional competencies are significantly shaped by early experiences, and effective detection and intervention strategies can mitigate developmental delays, as noted by several studies [8,9]. Regular assessments can guide educators and parents in making informed decisions that foster children's holistic development [5,10]. Additionally, the economic benefits of investing in early childhood educational programs that prioritize growth monitoring are profound, as they contribute to enhanced workforce productivity and reduced healthcare burdens in the future [9,11]. Therefore, systematic approaches to monitor and evaluate early childhood development are fundamental not only for individual children but also for fostering healthier communities and societies [10,12].

The *Posyandu*, or Integrated Healthcare Post, plays a critical role in the early detection and prevention of stunting and developmental delays among children in Indonesia. By providing a platform for community engagement, *Posyandu* facilitates essential health services including routine health checks, nutritional education, and vaccinations, while employing anthropometric measurements to monitor children's growth [13,14]. These activities are conducted by trained community health cadres who engage with families to assess growth metrics and provide health education on the prevention of stunting through balanced nutrition and appropriate feeding practices [15,16]. Research indicates that improved training and competency among *Posyandu* cadres significantly enhance their ability to detect stunting early, thus enabling timely interventions [17,18]. Furthermore, regular engagement in *Posyandu* activities fosters a supportive community environment, which can lead to increased awareness and proactive measures in addressing nutritional deficiencies [19,20].

The significance of *Posyandu* extends beyond immediate health benefits, marking its importance in the broader context of child development. Studies have shown that timely detection and intervention within the *Posyandu* framework can positively impact not only physical health but also cognitive and emotional development [21]. In this regard, the role of cadres becomes paramount as they not only monitor but also educate parents about developmental milestones and the adverse effects of stunting on long-term health and academic success [22,23]. Well-prepared and knowledgeable *Posyandu* cadres are thus essential for executing these programs effectively, influencing both community health outcomes and laying a foundation for children's future development. Ultimately, by empowering the *Posyandu* system and increasing its operational capacity, we can more effectively combat stunting and developmental delays among at-risk populations [24,25].

The effectiveness of *Posyandu* cadres in preventing stunting and addressing developmental delays is often hampered by their limited understanding and lack of appropriate media aids. A significant number of studies emphasize the necessity for enhanced training programs that equip cadres with knowledge about stunting detection and prevention strategies [26,27] Research indicates that many *Posyandu* cadres lack familiarity with accurate height measurement techniques and nutritional education, which are crucial for early identification of stunting [26,28]. Training programs that combine theoretical knowledge with practical experience can significantly improve their competencies in these areas; however, many existing initiatives do not provide comprehensive coverage [29]. Furthermore, the inclusion of audio-visual materials, such as videos and leaflets, has been shown to engage cadres effectively, yet many programs do not utilize these resources optimally [30] . For instance, some studies reveal variability in the impact of audio-visual media on knowledge improvement, suggesting that both quality and delivery methods require careful evaluation for maximal effect [31].

Moreover, the scarcity of effective communication tools limits the ability of *Posyandu* cadres to relay important information to families about stunting prevention and nutritional practices [28,32]. While community service interventions often provide training and educational materials, the lack of interactive and engaging media can hinder understanding and retention among cadres [33]. A promising approach involves technology-based aids, such as chatbots or mobile applications, which enable quick dissemination of information [27]. Nevertheless, the success of these initiatives depends on ongoing support and exposure to novel training methods to enhance the effectiveness of *Posyandu* services. Thus, addressing these limitations is essential for improving the proficiency of *Posyandu* cadres, ultimately contributing to better outcomes in tackling stunting and developmental delays in children.

Posyandu, as Indonesia's community-based health post, serves as the frontline in monitoring child health indicators and delivering preventive care. However, many cadres still experience difficulties in interpreting growth charts and identifying developmental milestones accurately due to limited technical training and the absence of visual educational tools. Research conducted in similar community programs highlighted that health cadres' knowledge and confidence can be significantly improved through visual and participatory learning approaches. Visual media, such as flipcharts and posters, have been proven to enhance message comprehension and retention among both cadres and parents, promoting more effective communication during health education sessions.

In the working area of *Puskesmas* Tahtul Yaman, Jambi City, preliminary observations revealed that most of the 30 active *Posyandu* cadres had limited understanding of child development indicators and lacked

standardized visual media to support their counselling activities. To address this gap, this community service program was designed to improve cadres' competence through the development and implementation of visual aids—specifically flipcharts and posters—used in training and practical simulation. The objective of the program was to strengthen cadres' knowledge, confidence, and communication skills in child growth monitoring, ultimately contributing to early detection of growth and developmental problems in the community.

METHODS [ARIAL 10PT, BOLD]

This community service program applied a participatory and collaborative approach involving the Tahtul Yaman Public Health Center (Puskesmas) and *Posyandu* cadres as primary partners. The activity was carried out from July to September 2025 in Jambi City, Indonesia, and involved 30 *Posyandu* cadres from 12 active community health posts. Most participants were women with at least a high school education and more than three years of experience as community health volunteers. The program aimed to enhance cadres' understanding and skills in monitoring child growth and development through the introduction and utilization of visual educational tools.

The implementation consisted of five sequential stages: needs assessment, development of visual aids, training and simulation, field implementation, and evaluation. During the needs assessment phase, interviews and focus group discussions were conducted with cadres and *Puskesmas* staff to identify existing gaps in knowledge and the lack of supporting media. Based on the findings, visual aids in the form of flipcharts and posters were developed. The flipchart contained indicators of child growth and development for ages 0–60 months, simplified WHO growth charts, and early stimulation guidelines for parents, while the poster summarized key developmental milestones and early warning signs. Both media were reviewed and validated by paediatric and health promotion experts to ensure content accuracy and usability.

The training and simulation phase was conducted through a one-day workshop held at the *Puskesmas* hall. The sessions included lectures, discussions, and hands-on demonstrations to train cadres on the use of flipcharts and posters during *Posyandu* activities. Cadres then practiced delivering counselling using the visual tools through simulated scenarios. Following the training, the visual aids were implemented during routine *Posyandu* sessions, where cadres used them to educate parents about child growth and development. The evaluation process included pre-test and post-test assessments to measure changes in knowledge and confidence, as well as observation checklists and satisfaction questionnaires to gather qualitative feedback. Descriptive analysis was used to compare pre- and post-training results, while qualitative insights guided further improvement of the media and the training module. This participatory approach ensured active cadre involvement at every stage, promoting sustainability and replicability of the program within other community health settings.

RESULTS

The training program on the use of visual aids for monitoring child growth and development was conducted at the Tahtul Yaman Public Health Center in September 2025. A total of 30 Posyandu cadres from 12 active community health posts participated, all of whom attended the entire session (100% attendance rate). Most participants were women aged over 35 years, with a high level of motivation and commitment to community health promotion. The general characteristics of the participants are presented in **Table 1**.

Table 1. Characteristics of Posyandu cadres participating in the training

Characteristic	Category	n	%
Age	< 35 years	10	33.3
	≥ 35 years	20	66.7
Education	Senior high school	18	60.0
	Diploma/Bachelor's degree	12	40.0
Experience as cadre	< 3 years	8	26.7
	≥ 3 years	22	73.3
Attendance	Full participation	30	100

As shown in Table 1, the majority of cadres were experienced community volunteers with a solid foundation for capacity building. The high attendance rate (100%) reflected their enthusiasm and recognition of the importance of improving skills in child growth and development monitoring.

To evaluate the effectiveness of the training, pre-test and post-test assessments were administered to measure changes in knowledge and comprehension. The results demonstrated a substantial improvement, with the mean score increasing from 55 (pre-test) to 82 (post-test), equivalent to a 49% increase in knowledge levels, surpassing the targeted 30% improvement threshold (**Table 2**)

Table 2. Comparison of pre-test and post-test scores of *Posyandu* cadres

Parameter	Mean Score	Increase (%)
Pre-test	55	–
Post-test	82	49

The significant increase in post-test scores indicates that the training effectively enhanced cadres' understanding of child growth and development indicators. The combination of interactive lectures, simulations, and the use of visual aids such as flipcharts and posters contributed to better learning outcomes. This finding aligns with previous studies emphasizing that visual learning materials improve comprehension and retention among adult learners, particularly in health education contexts where abstract concepts need to be simplified for practical application.

In addition to knowledge improvement, participant feedback was collected to assess satisfaction and usability of the visual aids. The feedback summary is shown in **Table 3**.

Table 3. Participant feedback on the training program

Aspects Assessed	Agree (%)	Disagree (%)
Training materials were relevant to cadre needs	93.3	6.7
Flipchart was easy to use	90.0	10.0
Poster was clear and understandable	86.7	13.3
Simulation sessions improved practical skills	93.3	6.7
Training was beneficial for daily *Posyandu* activities	100	0

As reflected in Table 3, nearly all participants agreed that the materials were relevant and practical, while 100% expressed that the program was beneficial for their daily *Posyandu* work. During the field implementation stage, cadres successfully applied the flipchart and poster to educate parents about growth and development milestones. Observations indicated that parents were more engaged and could more easily understand the information presented visually. The *Puskesmas* management expressed its commitment to replicate the visual aids across all *Posyandu* within its service area, ensuring sustainability and broader community impact.

DISCUSSION

These results are consistent with earlier studies reporting that participatory training and the integration of visual media improve health cadres' performance and communication skills. Visual tools support dual-channel learning by combining verbal and visual information, which enhances message retention and behaviour change. Furthermore, the program fostered stronger collaboration between academic institutions and local health authorities, demonstrating an effective model for sustainable community empowerment in early childhood health promotion.

The implemented intervention aimed at enhancing the competence of *Posyandu* cadres regarding early childhood health yielded significant quantitative and qualitative outcomes. From a pre-test score of 55 to a post-test score of 82, the cadres experienced a notable increase in knowledge related to stunting prevention and early childhood development. This aligns with findings reported in the literature, which suggest that community empowerment interventions significantly improve the knowledge of health cadres regarding topics such as stunting prevention and optimal nutrition during the first 1000 days of life [34]. Additionally, participant satisfaction and engagement were high, with over 90% agreement on the relevance and usability of the training provided. Field implementation witnessed full participation from all cadres, along with positive feedback from parents, indicating a successful initiation of the program's objectives in improving communication and competency among community health workers [35].

The significance of the knowledge improvement can be attributed to the multifaceted approach employed in the training program. By incorporating interactive training modules, visual media, and hands-on simulation, the learning outcomes were markedly enhanced. The use of flipcharts and posters simplified complex health information, allowing cadres to grasp essential concepts effectively. This aligns with adult learning theory, which posits that visual and participatory methods facilitate comprehension and improve retention of information [36]. As a result, the empowerment of community health cadres in early childhood health programs notably improved their capacity to serve their communities in preventing stunting and ensuring healthy development during critical growth periods.

Findings from this study are consistent with similar research conducted in Indonesia and other low-resource settings that demonstrate the effectiveness of training programs tailored to health workers in increasing awareness and implementing practices that prevent stunting [37].

The intervention has had tangible impacts on real-world health outcomes. Enhanced interactions between cadres and parents at *Posyandu* have fostered increased awareness and active participation in growth monitoring [38]. The strengthened collaboration between the university and *Puskesmas* has paved the way for sustained community engagement and built a framework for future health programs. The program's design allows for replication across other community health center with minimal costs, thus promoting a scalable model for health improvement in similar contexts [39].

Despite the successes, several challenges were encountered during the implementation phase. One limitation was the restricted timeframe allocated for simulation sessions, which may have impacted the depth of learning. Additionally, variability in the educational backgrounds and comprehension speeds of the cadres presented obstacles to uniform knowledge improvement [35]. The scale of implementation was limited to a single *Puskesmas* area, suggesting that broader application would require further evaluation. Future iterations of the training could benefit from extended mentoring or follow-up sessions to reinforce learning outcomes and application in a community setting.

Looking ahead, the *Puskesmas* plans to replicate the visual aids utilized in this intervention across additional *Posyandu.* There is also potential for creating a digital version of the flipcharts and posters, which could further enhance accessibility and usability of the materials [38]. Long-term, this initiative is expected to yield significant benefits for the early detection of developmental problems and the prevention of stunting. Registering the flipchart and poster as intellectual property could also provide a robust foundation for sustainable health education resources in the community setting [35].

CONCLUSION

This community service program successfully improved the knowledge and skills of *Posyandu* cadres in monitoring child growth and development through the use of visual educational aids. The introduction of flipcharts and posters proved effective in simplifying complex health information and enhancing cadres' ability to communicate with parents. The significant increase in post-test scores, along with strong positive feedback from participants, demonstrates that participatory training combined with visual learning media is an effective strategy for empowering community health workers. Moreover, the program fostered greater engagement between cadres and parents, contributing to improved early detection and prevention of developmental delays and stunting at the community level.

To ensure sustainability, it is recommended that similar training programs be conducted regularly for new cadres and replicated in other *Posyandu* under different health centers. The developed visual aids can be reproduced or adapted into digital formats to reach a wider audience. Continued collaboration between universities, local health authorities, and community organizations is essential to strengthen capacity-building efforts and ensure the long-term impact of visual-based health education in Indonesia.

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