NAK-KANAK: Journal of Child Research
E-ISSN: 3047-1168 P-ISSN: 3047-504X
JCR, Vol. 2 (4), November 2025 (173-187)
DOI: https://doi.org/10.21107/njcr.v2i4.205

School-Based Health Service Programs and Early Childhood Growth and Development: Evidence from an Indonesian Kindergarten

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ARTICLE INFO

Article History:
Received: October 10, 2025
Revised: November 29, 2025
Accepted: November 30, 2025

Keywords:
Early Childhood Education;
Health Services;
Child Development;
Early Detection;
Parental Involvement.

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ABSTRACT

Background of the study: Health services in early childhood education are crucial for supporting holistic growth and development. Integrating health programs in early learning settings facilitates early detection of developmental delays, promotes nutritional health, and strengthens family and institutional engagement. Research on the practical implementation of such programs in Indonesian early childhood education remains limited.

Aims and scope of paper: This study examines the implementation of health service programs at Mutiara Idaman Kindergarten, focusing on early detection of child growth and development, collaboration with community health centers (*Puskesmas*) and other health institutions, and the role of parental and institutional involvement in program effectiveness.

Methods: A qualitative descriptive approach was employed. Data were collected through in-depth interviews with the principal and vice principal, and through direct observations of program activities. Data analysis followed the stages of reduction, display, and conclusion drawing.

Results: Two main programs were identified: the "Toddler Excursion" program in collaboration with the Puskesmas, including growth assessments, nutrition provision, and health facility orientation; and the Early Detection of Growth and Development program with Anna Medika and Muntia Husada University, focusing on developmental screening prior to kindergarten enrollment. Both programs feature intensive collaboration between educational and health institutions, active parental participation, and procedural adaptations to contextual challenges, including the COVID-19 pandemic. Main challenges include logistics coordination, sensitive communication with parents, and program continuity.

Contribution: The programs demonstrate the effectiveness of integrating health services within early childhood education to support holistic child development. They enable early identification of developmental delays, promote family awareness and engagement in child health, and generate reliable data for evidence-based follow-up interventions. This study contributes to global understanding of best practices for school-based health programs and provides actionable recommendations for early learning institutions seeking to implement collaborative, health-oriented initiatives that optimize child growth and developmental outcomes.

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INTRODUCTION

Early childhood growth and development is a complex process involving multiple interrelated dimensions, including physical, motor, cognitive, language, social, and emotional development, which together form the foundation of a child's future personality (Santrock, 2021). The critical period from birth to six years, often referred to as the "golden period," represents a phase of peak brain plasticity, during which appropriate stimulation and support have long-term effects on a child's quality of life into adulthood. However, developmental challenges remain a serious issue worldwide, including growth disorders such as stunting and wasting, delays across various developmental domains, and health problems that hinder learning (Organization, 2021). Early-life disruptions not only affect physical health but also impact cognitive abilities, academic achievement, future economic productivity, and the risk of degenerative diseases later in life (Wahyudi et al., 2024).

Globally, early childhood health faces numerous challenges requiring urgent attention. Data from the World Health Organization indicate that millions of children experience developmental disruptions due to malnutrition, infectious diseases, and limited access to adequate health services and stimulation In Indonesia, child health issues remain concerning, with stunting prevalence still above national targets despite recent declines, high rates of infectious diseases among young children, and disparities in health service access between urban and rural areas. In early childhood education, suboptimal health directly affects children's ability to engage actively in learning, reduces concentration, and increases absenteeism, disrupting continuity of education. The close relationship between health and education necessitates a holistic and integrative approach that incorporates health services into early childhood education systems to ensure every child reaches their optimal developmental potential. The government's integrative holistic early childhood education policy emphasizes the importance of synergy between education, health, nutrition, caregiving, and child protection as a comprehensive strategy to improve the quality of future generations (UNICEF, 2021).

Previous studies have explored the importance of health services in supporting early childhood development through various approaches. Research on basic health examinations at Posyandu indicates that activities such as weighing, height measurement, and developmental screening can serve as effective early detection tools for developmental issues requiring immediate intervention (Kementerian Pendidikan Riset, dan Teknologi, 2023). Other studies highlight the role of early childhood educators in early detection, as teachers observe children over extended periods and across various activities, allowing them to identify deviations that might be missed in brief routine health checks (Kristiwati, 2023). Studies on educators' and community health workers' knowledge of early detection indicate that human resource capacity is a key factor in the success of health service programs (Behrends et al., 2025; Boo et al., 2025; Cui et al., 2024; Fuentes et al., 2024; Gatting et al., 2026; Hestbaek et al., 2025; Jörger et al., 2025; Lee et al., 2025; Ray et al., 2024). However, most prior research has focused on early detection programs conducted in Posyandu settings or as temporary community service activities, while qualitative studies exploring sustained institutional practices in early childhood education are still limited (Afrianti & Yuliantina, 2024). This gap is important to address given that early childhood institutions have unique characteristics compared to community health settings, including organizational structure, dynamics with parents, and specific challenges in integrating health services into educational programs.

Community health services, particularly through Puskesmas and Posyandu, serve as the backbone of Indonesia's primary health system, providing preventive and promotive services for mothers and children. Programs such as child growth monitoring, immunization, supplementary feeding, and health education are routinely implemented to reach children within communities (Indonesia, 2022). Nevertheless, coverage and quality face challenges such as limited healthcare personnel, inadequate facilities, and low community participation, especially in certain regions. Collaboration between the health sector and early childhood education institutions is a vital strategy to increase the reach and effectiveness of child health services. School-based Posyandu

programs, which integrate health services into educational settings, have been shown to enhance accessibility and facilitate more systematic and regular health monitoring of children (Khadijah et al., 2025). Partnerships with higher education institutions specializing in health provide added value through expert involvement and the development of research-based innovative programs, improving the quality of early detection services. Despite the development of various collaborations across regions, in-depth exploration is still needed regarding effective collaboration mechanisms, implementation challenges, and management strategies to ensure program sustainability (Nesy & Pujaningsih, 2025).

TK Mutiara Idaman in Bangkalan is one of the early childhood institutions that consistently implements health service programs through strategic collaboration with local Puskesmas and other health institutions, such as Anna Medika and Universitas Muntia Husada. The institution recognizes that optimizing children's growth and development cannot rely solely on educational stimulation but requires systematic and sustained health support. Based on this understanding, TK Mutiara Idaman has developed a "Toddler Excursion" program, involving student visits to Puskesmas to receive comprehensive growth assessments, health education, and early exposure to health facilities. This program has been running for several years and involves multiple stakeholders, including healthcare personnel, teachers, and parents. Additionally, the institution has implemented an Early Detection of Growth and Development program in collaboration with university experts to conduct in-depth screening of prospective students before they enter kindergarten. Implementation challenges include transportation logistics, sensitive communication of examination results to parents, program continuity during changing conditions such as the pandemic, and financing requiring parental participation. In-depth exploration of TK Mutiara Idaman's experience in managing health service programs, including strategies developed to overcome challenges and lessons learned, can provide valuable insights for other early childhood institutions seeking to implement similar programs.

Based on this background, this study aims to analyze the implementation of health service programs at TK Mutiara Idaman in optimizing early childhood growth and development. Specifically, the study addresses how health programs are implemented, the forms of collaboration with health institutions, program operational mechanisms including logistics coordination and communication with parents, benefits obtained for children and families, challenges encountered, and strategies developed to overcome them. Using a qualitative descriptive approach, this research is expected to contribute to the development of holistic and integrative early childhood education practices, provide guidance for other early childhood institutions in developing context-specific health programs, and offer recommendations for policymakers to strengthen synergy between the education and health sectors in supporting optimal child development in Indonesia.

METHOD

Research Design

This study employed a descriptive qualitative approach to explore in-depth the implementation of health service programs at TK Mutiara Idaman in supporting early childhood growth and development. The qualitative approach was chosen because it allows researchers to understand complex phenomena within their natural context, capture the perspectives and experiences of key actors, and identify the underlying processes and mechanisms of program implementation (Creswell & Poth, 2018).

Research Setting and Participants

The study was conducted at TK Mutiara Idaman, located in Bangkalan, East Java. The site was purposively selected due to its systematic and sustainable implementation of health service programs in collaboration with health institutions. Data collection took place through direct site visits. Participants included the principal, Mrs. TM, and the vice principal, Mrs. FZ, selected using purposive sampling because of their central roles in planning, implementing, and evaluating the

health service programs, as well as their comprehensive understanding of the program's history, processes, and development over time.

Data Collection Techniques

Data were collected using in-depth interviews and field observations (Creswell & Poth, 2025). Semi-structured interviews were guided by thematic questions covering the history and background of health programs, forms of collaboration with health institutions, implementation mechanisms, stakeholder roles, program benefits, challenges encountered, and management strategies. Interviews were conducted in an informal and dialogic manner, lasting approximately 60–90 minutes per participant, to ensure comfort and encourage open sharing of experiences and perspectives. Observations were conducted non-participatively, with the researcher documenting the physical context of the institution, program documentation such as schedules or health assessment reports, and the overall school environment, without directly participating in activities. Observations focused on available health facilities, program records, and the general school atmosphere to complement and enrich the interview data.

Data Analysis

Collected data were analyzed using the qualitative data analysis framework developed by Miles et al., encompassing three stages: data reduction, data display, and conclusion drawing (Miles et al., 2020). Data reduction involved selecting, focusing, simplifying, and abstracting raw data, including verbatim transcription of interviews, repeated reading, and identification of segments relevant to the research questions. Data display involved organizing reduced data into thematic narratives based on key aspects of the health service programs, including program types, implementation mechanisms, collaboration with health institutions, parental involvement, program benefits, and challenges and management strategies. Conclusion drawing was the final stage, in which the researcher interpreted the meaning of identified patterns and themes, linked findings to relevant literature, and formulated substantive conclusions regarding the studied phenomenon.

Trustworthiness of the Study

To ensure credibility and validity, this study applied data triangulation by comparing information from two participants and cross-verifying interview data with observational findings. Member checking was conducted by providing participants with a summary of findings to confirm the accuracy of interpretations. Researcher reflexivity was also maintained by acknowledging and documenting assumptions, potential biases, and the researcher's positionality that could influence the research process.

RESULTS

Based on in-depth interviews with the principal, Mrs. TM, and the vice-principal, Mrs. FZ, as well as field observations conducted on 15 November 2025, this study identified the comprehensive practices in implementing health service programs at TK Mutiara Idaman, which are designed to optimize the growth and development of early childhood. The findings are presented thematically, focusing on key aspects of the health service program, including program history and structure, implementation mechanisms, collaboration with health institutions, parental involvement, program benefits, and challenges along with management strategies.

History and Background of the Health Service Program

The health service program at TK Mutiara Idaman began as a collaborative initiative with the local Community Health Center (*Puskesmas*), which has been in place for several years. According to Mrs. TM, this partnership originated when the Puskesmas approached the school to propose collaboration on the "Toddler Field Trip" program, one of the Puskesmas' flagship initiatives aimed at improving the health and health awareness of early childhood within its

service area. The program was led by Dr. P from the Puskesmas, who actively initiated and coordinated the Toddler Field Trip activities with various early childhood education institutions in the region.

The collaboration was positively received by the school, considering the crucial role of health in supporting early childhood education. However, program implementation required shared financial responsibility. The school held deliberations with parents to determine an appropriate funding mechanism, ensuring that the activities could be carried out without overburdening any single party. It was agreed that parents would contribute to the program funding, which enabled children to receive various benefits, such as nutritious snacks, toothpaste, and toothbrushes, as part of oral health education.

The Toddler Field Trip program, organized jointly with the Puskesmas, encompasses a series of comprehensive activities designed to provide basic health services while delivering health education to children. The main activities include: *first*, child growth and development assessments, including weight and height measurements to evaluate physical growth; *Second*, educational games designed to stimulate multiple areas of child development, including gross and fine motor skills, cognitive skills, and socio-emotional development; *Third*, health interventions during specific months, such as deworming treatments as part of a program to prevent parasitic infections; and *fourth* accinations according to the recommended immunization schedule.

Additionally, the program introduces children to health facility environments, familiarizing them with different rooms in the Puskesmas, such as examination rooms, immunization rooms, laboratories, and waiting areas. This exposure reduces anxiety and helps children feel more comfortable when visiting health facilities in the future.

Program Implementation and Teacher Involvement

The program involves all educational levels at TK Mutiara Idaman, from playgroups to TK B. Considering the large number of students, the school and Puskesmas coordinate to divide children into smaller, more manageable groups. Grouping is determined by the Puskesmas based on facility capacity and available healthcare personnel, while teachers from the school accompany each group throughout the activities. Teacher supervision is considered essential because Puskesmas staff may not be familiar with the individual characteristics or special needs of each child. The presence of teachers who are familiar with the children helps manage behavior, provide a sense of security and comfort, and anticipate potential challenges that may arise.

Adaptation During the COVID-19 Pandemic

The program underwent significant adaptations during the COVID-19 pandemic. Although the program continued, procedural modifications were implemented to minimize the risk of viral transmission. Children were no longer allowed to enter the health facility rooms directly, as had been the case before the pandemic. Instead, room introductions were conducted from outside, with teachers explaining the function of each room as seen through windows or doors. While less interactive than before, this approach still provided children with a basic understanding of the available facilities while maintaining strict health protocols.

Health Assessment Reports

A critical output of the Toddler Field Trip program is a comprehensive health report on each child's growth and development, prepared by the Puskesmas based on assessment results. The report includes physical growth data, such as weight, height, and nutritional status, as well as information on developmental achievements across multiple domains. When a child is identified with conditions requiring further attention, such as growth abnormalities, developmental deviations, or specific health issues, the Puskesmas provides recommendations to the school for parents to seek follow-up examinations with specialized healthcare professionals or more comprehensive health facilities.

Some children were identified as having conditions that required attention, such as imbalances between weight and developmental milestones, which may indicate potential

nutritional or developmental issues. Mrs. TM explained that these findings do not necessarily reflect classic nutritional deficiencies, as some children receive adequate meals from their families but exhibit disproportionate weight relative to their height or age, possibly due to genetic or metabolic factors. Nevertheless, such findings are communicated to parents so that they can consult healthcare professionals for accurate explanations and appropriate recommendations.

Communication of Health Assessment Results to Parents

Communicating health assessment results to parents, particularly when potential issues are identified, requires sensitivity and a well-planned strategy. According to Mrs. FZ, the school sometimes hesitates or feels reluctant to directly inform parents that their child may be experiencing malnutrition or other health concerns. This hesitation arises for several reasons, including concerns that parents might feel offended or defensive, especially if they believe they have provided adequate care and nutrition. In addition, social sensitivities related to the stigma that may be associated with certain health or nutritional conditions can make parents feel hurt or embarrassed.

To address these challenges, the school has developed a delicate and empathetic communication strategy. Information is not conveyed bluntly or with negative labels that could cause offense. Instead, teachers or school staff communicate carefully, emphasizing that the assessment results indicate a condition that requires attention or further evaluation, without passing judgment or blaming parents. The communication process begins with appreciation for parents' attention to their child's health, followed by a factual presentation of findings based on the assessment results, and concludes with recommendations for follow-up actions, such as consultation with a pediatrician or nutritionist. This empathetic and supportive approach aims to ensure that parents do not feel blamed but rather feel supported in taking the best steps for their child's health.

Logistics and Transportation Coordination

The implementation of the Toddler Field Trip program also involves complex logistical challenges, particularly regarding the transportation of children from the school to the Puskesmas. At the beginning of the program, the school employed a strategy that relied on parents with private vehicles to transport groups of children. However, this approach created new problems, as the number of vehicles arriving at the school was substantial, leading to long queues and congestion that disrupted traffic and generated complaints from other road users. Recognizing this issue, the school organized discussions to identify alternative solutions.

From these deliberations, it was agreed that parents would transport their children directly to the Puskesmas according to the designated schedule. To facilitate coordination, the school provided parents with complete information, including the expected arrival time and contact numbers for any issues. This strategy aimed to reduce the concentration of vehicles at a single point while giving parents greater flexibility. However, evaluations revealed a new challenge: not all children arrived on time. Some parents delivered their children earlier or later than scheduled, complicating the coordination of activities since the Puskesmas had prepared a structured schedule and groupings.

To address this challenge, further discussions were held involving the school, parent representatives, and the Puskesmas to find a more effective solution. The result of these discussions was an agreement that the Puskesmas would pick up the children directly from the school using a dedicated ambulance allocated specifically for public health programs, rather than ambulances used for emergency services or transport of deceased patients. Using the Puskesmas ambulance to transport children was considered an optimal solution because it ensured that all children departed simultaneously, reduced the coordination burden on parents, and provided an engaging experience for the children, who felt special riding in a health service vehicle. This strategy proved to be more effective in managing transportation logistics and ensuring the smooth implementation of the program.

Program Transition and Collaboration with Anna Medika

The Toddler Field Trip program in collaboration with the Puskesmas was temporarily suspended during the COVID-19 pandemic due to activity restrictions and the shift to online learning. Despite the suspension, the need for integrating health services into early childhood education remained a priority for the school. Health themes continued to be incorporated into online learning with adapted methods, such as health education through videos or assignments related to healthy habits that children could practice at home with parental guidance.

After the pandemic subsided and face-to-face learning resumed, TK Mutiara Idaman did not simply continue the Toddler Field Trip program in its previous format. Instead, the school developed a new collaboration with Anna Medika and Universitas Muntia Husada. This transition occurred when Anna Medika invited the school to collaborate on a health service program. In initial discussions, some proposed programs were deemed overly burdensome for the school, both financially and operationally. Recognizing this, the school conducted intensive coordination with Anna Husada care services affiliated with Anna Medika, which led to consultations with experts from Universitas Muntia Husada specializing in child health and development.

The school subsequently met directly with the rector of Universitas Muntia Husada to explore a more feasible collaboration aligned with the school's needs and capacities. From these discussions, an agreement was reached to develop the Early Childhood Development Screening Program (DDTK), which differed from the previous Toddler Field Trip program. This new program focused on systematic screening of incoming students and did not include educational visits to health facilities as in the previous program. The collaboration involved providing experts from Universitas Muntia Husada, particularly faculty with expertise in child development, to conduct comprehensive assessments prior to the new academic year.

Early Childhood Development Screening (DDTK) Program

The DDTK program, developed in collaboration with Universitas Muntia Husada, differs from the Toddler Field Trip program by emphasizing in-depth screening for each prospective student at TK Mutiara Idaman. The program is scheduled annually in June, ahead of the academic year starting in July. All incoming students are required to undergo developmental assessments before admission, enabling the school to establish baseline data on each child's development from the outset.

Unlike the Toddler Field Trip program, which emphasized general health and familiarization with health facilities, the DDTK program specifically focuses on detecting child development across multiple domains, including gross and fine motor skills, language and communication, cognitive abilities, and social-emotional development. The screening does not cover detailed sensory health assessments (e.g., vision, hearing, ENT), as the evaluators are child development faculty rather than medical specialists. Children with potential health concerns identified during screening are referred to appropriate medical professionals for further evaluation.

Parental involvement is integral to the DDTK process. Parents are required to attend screening sessions in person, as their participation cannot be delegated to other caregivers or family members. This is essential because assessments involve not only observation and testing of the child but also in-depth interviews with parents regarding the child's developmental history, home care practices, parental concerns, and family dynamics that may influence development. Information gathered from parental interviews provides crucial context to complement direct observations, resulting in a more comprehensive and accurate assessment.

Assessment results are provided directly to parents in written reports either during or immediately after the screening, rather than through the school. This approach ensures parents receive complete information and can discuss the findings, recommendations, and next steps directly with the evaluating specialists. Copies of the reports are also submitted to the school for student documentation purposes. In these reports, evaluators highlight findings requiring special attention, enabling the school to identify children who may need additional support or educational adjustments.

When a child is identified with special needs based on DDTK results, the classroom teacher schedules a follow-up meeting with the parents. These discussions aim to ensure parents understand the assessment outcomes, review how the school can support the child, and coordinate further actions, such as referral to medical specialists or modifications in learning approaches. Teachers also gather additional information about specific health conditions, such as allergies, sensitivities, or other special needs that must be accommodated in daily school activities. Effective coordination between the school and parents based on DDTK results ensures that each child receives individualized support.

Benefits of Health Service Programs

The implementation of health service programs at TK Mutiara Idaman, including both the Toddler Field Trip and DDTK programs, provides significant benefits for children, parents, and the school.

First, early detection of potential developmental delays or health issues is a fundamental benefit. Systematic assessments allow conditions that might go unnoticed by parents or teachers to be identified early. Early intervention is critical, as treatments implemented during initial developmental windows are far more effective than delayed interventions. For example, children with delayed language development can be referred to speech therapists promptly, maximizing the efficacy of intervention.

Second, the programs enhance health awareness among children and families. The Toddler Field Trip program includes education on healthy habits such as handwashing, dental hygiene, and nutritious eating, providing practical knowledge that children can apply daily. Health kits, including toothpaste and toothbrushes, serve not only as educational tools but also as incentives to encourage regular oral care. Familiarity with the Puskesmas environment reduces anxiety about future visits to health facilities.

Third, the programs generate comprehensive and structured developmental data for each child. The assessment reports serve as important documentation for monitoring progress over time. Baseline data from DDTK assessments at school entry provides a reference point for evaluating subsequent developmental progress. For teachers, access to detailed developmental data supports designing individualized learning approaches. For parents, structured data offers objective guidance on areas needing attention or additional stimulation.

Fourth, the programs strengthen collaboration between schools, families, and health institutions. Regular interactions among stakeholders facilitate information sharing and coordinated efforts for the child's best interests. Collaboration also simplifies referrals when children require advanced healthcare services. Health institutions, including the Puskesmas and Universitas Muntia Husada, benefit from access to a broader population of young children for health promotion and preventive programs.

Challenges in Program Implementation

Despite its benefits, implementing health service programs at TK Mutiara Idaman faces several challenges requiring targeted management strategies. *First*, logistical coordination, particularly transportation during the Toddler Field Trip program, presents a challenge. As previously described, finding an efficient, safe, and non-disruptive transport mechanism required multiple trials and consultations before adopting the Puskesmas ambulance service. Coordination also involves aligning schedules between the school and health institutions, each with limited capacity.

Second, communicating sensitive health findings to parents is a delicate challenge. Teachers must balance honesty with empathy, especially given the varying levels of parental education and health literacy. Some parents respond proactively to recommendations, while others may underestimate the urgency or resist accepting that their child requires attention.

Third, program financing poses challenges. Although collaboration with health institutions provides numerous benefits, operational costs—such as snacks, transportation, and administrative expenses—remain. Funding through parental contributions requires transparency and accountability to ensure parents perceive that their contributions are used effectively.

Fourth, program continuity is challenged by unforeseen situations such as the pandemic. The suspension of the Toddler Field Trip program required renegotiation and adaptation for post-pandemic resumption. Transitioning from collaboration with the Puskesmas to Anna Medika and Universitas Muntia Husada required flexibility while maintaining the essential focus on health services.

Fifth, the DDTK program has limited coverage, focusing on developmental screening without comprehensive sensory health assessments. While aligned with the expertise of available personnel, this limitation requires parents to continue routine health checks elsewhere. Schools must communicate these limitations clearly to prevent misconceptions.

Program Management and Adaptation Strategies

To address these challenges, TK Mutiara Idaman has implemented several effective management strategies. *First*, open communication and participatory decision-making involve all stakeholders in resolving logistical or operational issues, fostering ownership and commitment.

Second, program flexibility and adaptability allow alternative collaborations when previous programs are disrupted, maintaining core health education objectives. *Third*, building teacher capacity in sensitive communication ensures health findings are conveyed empathetically and without judgment, promoting parental cooperation. *Fourth*, systematic documentation and utilization of developmental data enable individualized teaching interventions and informed communication with parents about children's progress. *Fifth*, sustaining strategic partnerships with health institutions ensures long-term program viability. Regular evaluations and continuous dialogue with health partners maintain responsiveness to emerging needs and challenges.

DISCUSSION

Implementation of Holistic-Integrative Early Childhood Education through Health Services

The findings of this study reinforce the importance of a holistic-integrative approach in early childhood education, which combines educational and health services into a mutually supportive system (Suyadi & Ulfah, 2021). he practices implemented at TK Mutiara Idaman demonstrate a concrete application of the holistic-integrative Early Childhood Education concept through systematic collaboration with the health sector. Both the Toddler Field Trip program and the Early Childhood Development Screening (DDTK) program are not additional, isolated initiatives, but integral components of the institution's service system designed to support optimal child development. This approach aligns with national policies promoting the integration of education, health, nutrition, caregiving, and child protection services as a comprehensive strategy to improve the quality of child development in Indonesia (Kementerian Pendidikan Riset, dan Teknologi, 2023).

The collaboration established by TK Mutiara Idaman with the Puskesmas and Universitas Muntia Husada exemplifies an effective partnership model between the education and health sectors. This collaboration goes beyond minimal referrals or coordination, involving joint planning, integrated implementation, and continuous program evaluation. The active roles of health program leaders, such as Dr. P at the *Puskesmas*, and the involvement of expert faculty from the university demonstrate the health sector's commitment to contributing to early childhood education. From the perspective of health institutions, collaborating with schools provides access to a more organized child population and facilitates the delivery of health promotion and disease prevention programs more efficiently than individualized approaches (Lestari & Rochmawati, 2025).

Early Childhood Development Screening (DDTK) as a Preventive Strategy

The DDTK program implemented at TK Mutiara Idaman aligns with recommendations from health organizations emphasizing the importance of developmental screening during critical periods (Indonesia, 2022). Conducting screenings before children enter kindergarten offers the advantage of identifying potential developmental concerns prior to full engagement in formal education. Early detection allows interventions to be implemented before problems become more

complex or interfere with learning. Research indicates that children who receive early intervention for developmental delays achieve significantly better long-term outcomes compared to those who receive delayed support (Nesy & Pujaningsih, 2025).

Mandatory parental involvement in the DDTK screening process is considered best practice because it offers multiple benefits. First, information obtained through parent interviews provides richer context regarding a child's developmental history, which cannot be fully captured through brief observation alone (Fetriyah et al., 2023). Second, delivering results directly to parents ensures they receive comprehensive explanations from experts and can ask questions or request clarifications immediately. Third, active parental participation increases understanding and awareness of the importance of monitoring child development, making parents more likely to follow through on recommended actions (Simanjuntak et al., 2025).

However, the DDTK program's focus on development screening without comprehensive sensory health assessments highlights the need for a clear understanding of the program's scope and limitations (Yuliani, 2022). This emphasizes that school-based screening does not replace routine, comprehensive health check-ups at primary healthcare facilities. The school's role is to conduct initial screening and provide referrals, not to deliver complete health services. Clear communication to parents is essential to prevent a false sense of security, where parents may assume their children have received full health assessments (Sulistyowati & Kayati, 2023).

School-Family Collaboration in Health Services

The findings regarding the importance of sensitive communication with parents when potential health or developmental issues are detected are consistent with literature on family-centered care in child health services (Utami et al., 2024). The approach developed by TK Mutiara Idaman—communicating information subtly and empathetically, avoiding blunt language, and providing support for follow-up—reflects principles of effective communication in sensitive contexts. Teachers' concerns that parents may feel offended or defensive are valid, as information about a child's health or development can provoke anxiety or denial.

Communication strategies can be further enhanced by providing formal training to teachers on therapeutic and family-centered communication techniques. Training can cover active listening, using clear and understandable language, delivering information gradually while observing parental emotional responses, and techniques for providing emotional support. Involving communication specialists or psychologists in teacher training can add significant value. Moreover, when findings are complex and require technical explanations, involving health professionals or child development experts in meetings with parents can ensure accurate information and answer technical questions effectively (Simanjuntak et al., 2025).

Active parental involvement—not only in receiving information but also in supporting follow-up at home—is a key factor in the success of child health programs. Research indicates that interventions involving close collaboration between professionals and families yield better outcomes than interventions conducted solely in professional settings without home continuity (Utami et al., 2024). The school's role extends beyond delivering screening results to include guiding parents on providing appropriate stimulation at home, monitoring child development, and accessing further health services when needed.

Implementation Challenges and Lessons for Other Institutions

The challenges faced by TK Mutiara Idaman in implementing health service programs provide valuable lessons for other early childhood education institutions aiming to develop similar programs. Logistical coordination, particularly transportation, is a practical issue often underestimated in program planning. The experience of TK Mutiara Idaman, which required multiple trials and errors before identifying an optimal solution, underscores the importance of flexibility and willingness to adapt based on evaluation. The final solution, using Puskesmas ambulances to transport students, may not be applicable in all contexts; each institution needs to explore options suitable for its resources and conditions (Febdinanty, 2024).

Financial challenges are also a reality for many early childhood institutions. Although collaboration with the Puskesmas or other health institutions can reduce costs through subsidies or free services, operational expenses such as snacks, transportation, and administration still need to be covered (Trisnantoro, 2021). TK Mutiara Idaman's strategy of conducting open deliberations with parents to agree on funding mechanisms represents best practice, ensuring transparency and accountability. Other institutions can adopt similar approaches by developing detailed budgets, communicating them openly with parents, and providing periodic accountability reports (Nurbaity, 2025).

Sustaining programs amid changing circumstances, such as a pandemic, requires resilience and innovation. TK Mutiara Idaman's ability to adapt by shifting collaboration to new partners when previous programs could not continue demonstrates the importance of maintaining a broad network of health institutions. Building strong relationships with multiple partners provides flexibility to switch or develop alternative programs when one collaboration encounters obstacles. Additionally, thorough documentation of processes and lessons learned from previous programs facilitates replication or adaptation in new contexts (Surtini et al., 2024).

Implications

The findings of this study have several important implications for early childhood education. Integrating health services into the school system supports a holistic and integrative approach to child development, aligning with national strategies that combine education, health, nutrition, and caregiving services. Systematic developmental screening, such as the Early Childhood Development Screening (DDTK) program, allows early identification of potential health and developmental issues, enabling timely interventions before problems escalate, which can improve long-term outcomes. Mandatory parental involvement in these screenings strengthens family engagement, enhances awareness of child development, and ensures adherence to follow-up recommendations, creating a supportive home environment. Furthermore, collaboration with health institutions such as Puskesmas and Universitas Muntia Husada demonstrates a practical and sustainable model for intersectoral partnerships, providing broader access to preventive health services and promoting efficient program delivery.

Research Contribution

This study contributes theoretically by providing empirical evidence on the practical implementation of holistic-integrative early childhood education, showing how systematic health-education collaborations can enhance child development. Practically, it offers a replicable model for early childhood institutions to implement comprehensive health programs, including program design, logistics, parental engagement, and sensitive communication strategies. Additionally, it informs policymakers about the benefits and considerations of school-based health programs, emphasizing preventive screening, early intervention, and structured collaborations between education and health sectors.

Limitations

The DDTK program focuses primarily on developmental screening and does not cover comprehensive sensory or medical health assessments, requiring parents to maintain routine check-ups elsewhere. Findings are based on a single school with specific health partners, which may limit generalizability to other contexts. Variations in parental education, health literacy, and responsiveness may affect program effectiveness and follow-up adherence. Moreover, pandemic-related adaptations may not fully reflect program implementation under normal conditions.

Suggestions

Based on these findings, it is recommended that early childhood institutions expand the scope of screening to include sensory and other health assessments through collaboration with medical specialists. Teacher training in therapeutic and family-centered communication should be enhanced to improve parental engagement. Further research is suggested to examine the

generalizability of integrated health programs across multiple schools and to assess long-term outcomes for children participating in such programs. Policymakers and institutions should also develop standardized guidelines for school-health sector partnerships, including logistics, financing, and evaluation mechanisms, while leveraging digital tools to monitor child development and enhance program transparency and efficiency.

CONCLUSION

This study analyzed the implementation of health service programs at TK Mutiara Idaman as a strategy to optimize early childhood growth and development through a holistic-integrative approach that combines education and health services. The findings indicate that the institution implements two main programs: the Toddler Field Trip program in collaboration with the Puskesmas, which includes comprehensive growth and development assessments, nutrition and health education, and familiarization with health facilities; and the Early Childhood Development Screening (DDTK) program in collaboration with Anna Medika and Universitas Muntia Husada, which focuses on systematic screening of incoming students prior to the academic year. Both programs are managed through intensive collaboration between educational and health institutions, active parental involvement in assessment and follow-up processes, and flexible adaptation to changing conditions, including during the COVID-19 pandemic. These programs provide early detection of developmental concerns, enhance child and family health literacy, generate structured developmental data for individualized educational planning, and strengthen multi-stakeholder collaboration in supporting children. Challenges include logistical coordination, sensitive communication of results to parents, program financing, continuity amid changing conditions, and limitations in assessment scope, which are addressed through open communication, program flexibility, teacher capacity building, systematic data utilization, and sustainable partnerships with health institutions.

The study contributes to understanding the practical implementation of holistic-integrative early childhood education in Indonesia and provides a replicable model for other early childhood education institutions. Recommendations for practice include strengthening strategic partnerships with the health sector, enhancing educators' capacity in health literacy and sensitive communication, actively engaging parents as partners in monitoring child development, and developing systematic documentation and data utilization for continuous improvement. Policy recommendations include reinforcing regulations and technical guidelines for ECE-health collaborations, allocating budgets to support health services in early childhood education, developing effective referral and coordination systems, and disseminating best practices to facilitate replication in other institutions. The implementation of health service programs at TK Mutiara Idaman demonstrates that, with commitment, collaboration, and effective management, early childhood institutions can make a significant contribution to optimizing children's growth and development through mutually reinforcing integration of education and health services.

AUTHOR CONTRIBUTION STATEMENT

Anggie Mursita Sari: Conceptualization, formal analysis and Writing—original draft. **Nailah Mumtazah:** Methodology, Supervision, Validation, and Investigation. **Nur Asikin:** Data curation, Resources, and Writing - Review & Editing.

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