



Original Article

Effect of animated video-based education on mothers' skills in the early detection of growth and development in children aged 1–5 years

Sri Wahyuni ¹, Arum Budiayati ¹✉, Ulfah Musdalifah ¹

¹ Midwifery Department, Health Polytechnic, Poltekkes Kemenkes Semarang, Semarang, Central Java, Indonesia

ARTICLE INFORMATION

Received: July 11, 2024
Revised: March 04, 2026
Accepted: March 10, 2026

KEYWORDS

Growth and Development; Child, Preschool;
Video Animated; Health Knowledge, Attitudes,
Practice

CORRESPONDENCE

Phone: 087778900526
E-mail: arumbudiayati97@gmail.com

ABSTRACT

Background: Early childhood is a critical period for growth and development, during which delays in motor and developmental domains remain common. In Indonesia, a considerable proportion of children experience developmental disorders, partly due to limited parental knowledge and suboptimal early stimulation practices. Animated video-based education can enhance learning by delivering information through engaging visual and auditory formats.

Purpose: This study aimed to examine the effect of animated video-based education on mothers' skills in the early detection of growth and development in children aged 1–5 years.

Method: A quasi-experimental study with a one-group pretest–posttest design was conducted at Pudukpayung Health Center, Semarang. A total of 33 mothers with children aged 1–5 years were selected using simple random sampling from a population of 93 respondents. Participants received a 10-minute animated video on early detection of child growth and development. Mothers' skills were assessed using an observation checklist before and two days after the intervention. Data were analyzed using a paired sample t-test.

Results: The mean score of early detection skills increased from 75.88 (pretest) to 85.88 (posttest), indicating an improvement of 10 points. Paired sample t-test analysis showed a statistically significant difference after the intervention ($p = 0.003$).

Conclusion: Animated video-based education significantly improves mothers' skills in the early detection of child growth and development. This approach may serve as an effective educational strategy in community health settings to enhance early detection practices.

INTRODUCTION

Early childhood is a critical period for growth and development, during which developmental delays remain prevalent. It is estimated that 5–25% of children experience fine motor developmental disorders.¹ In Indonesia, approximately 16% of toddlers have developmental delays, including impairments in fine and gross motor skills, hearing, cognition, and other developmental domains.² Optimal growth and development during this period are essential, as they determine long-term health and developmental outcomes.³

However, early detection and stimulation of child development are often suboptimal. Many parents, particularly mothers who are primary caregivers, lack adequate knowledge and skills to effectively monitor and stimulate their children's development.^{4,5} Health education,

therefore, plays a crucial role in improving parental capacity for early detection and stimulation of child growth and development.⁶

In practice, growth and development monitoring at integrated health posts (Posyandu) is still limited, primarily focusing on weight measurement, height assessment, and supplementary feeding programs. Comprehensive developmental screening, including cognitive, emotional, and behavioral aspects, is not routinely implemented. Although the Maternal and Child Health (KIA) Handbook provides guidelines for monitoring child development, its utilization by mothers remains suboptimal.⁷

Innovative and engaging educational approaches are needed to improve mothers' skills in early detection of child development. Animated video-based education offers a promising strategy by combining visual and auditory elements that enhance understanding, attention, and

<https://doi.org/10.30595/medisains.v24i1.23079>

©(2026) by the Medisains Journal. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. More information is available at [Attribution-NonCommercial 4.0 International](https://creativecommons.org/licenses/by/4.0/).

retention of information. Previous studies have demonstrated that animated video media can effectively improve knowledge, attitudes, and health-related behaviors.⁸⁻¹⁰

Despite its potential, the use of animated videos as an educational tool to improve mothers' practical skills in early growth and development detection remains limited. Most existing interventions focus on knowledge improvement rather than skill acquisition. Therefore, this study aimed to examine the effect of animated video-based education on mothers' skills in the early detection of growth and development in children aged 1–5 years.

METHOD

Study Design

This study used a quasi-experimental design with a one-group pretest–posttest approach.¹¹

Setting and Participants

The study was conducted in September 2023 at Pudukpayung Primary Health Center, Semarang, Indonesia. The study population is mothers with children aged 1–5 years. A total of 33 participants were selected using simple random sampling. Inclusion criteria were mothers of children aged 1–5 years who were able to see and hear, had access to WhatsApp, and resided in the Pudukpayung area. Exclusion criteria included mothers of children with congenital abnormalities and those who declined participation.

Experimental Procedure

The study consisted of three stages: pretest, intervention, and posttest. Data collection was conducted with the assistance of six trained enumerators. Baseline assessment was performed using an observation checklist to evaluate mothers' skills in early detection of child growth and development. Participants then received a 10-minute animated video on early detection and stimulation of child growth and development. The video was distributed via a WhatsApp group and could be accessed repeatedly over a two-day period. Posttest assessment was conducted two days after the intervention using the same observation checklist.

Variables, Instruments, and Measurement

The primary outcome of this study was mothers' skills in early detection of child growth and development. Skills were assessed using an observation checklist developed based on standard growth monitoring and developmental screening procedures. The checklist covered four domains: (1) measurement of child weight and height, (2) recording results in the Maternal and Child Health (KIA) handbook, (3) developmental screening using the Pre-Screening Developmental Questionnaire (KPSP), and (4) interpretation of screening results. Assessments were conducted through direct observation by trained enumerators.

Data Analysis

Data were analyzed using a paired sample t-test to compare pretest and posttest scores. Data normality was assessed using the Shapiro–Wilk test. Statistical significance was set at $p < 0.05$.

Ethical Consideration

This study was approved by the Ethics Committee of the Health Polytechnic, Ministry of Health, Semarang (No. 1094/EA/F.XXIII.38/2024).

RESULTS

Participant Characteristics

Table 1 presents the characteristics of respondents, including maternal age, education, employment status, parity, family income, and sources of information. Most respondents were in early adulthood (72.7%), had completed secondary education (63.6%), were unemployed (76.8%), and were multiparous (55.6%). The majority reported sufficient family income (66.7%), and the most common source of information was the internet (45.5%).

Changes in Early Detection Skills

Table 2 shows the mean scores of mothers' skills in early detection of child growth and development before and after the intervention. The mean score increased from 75.88 (SD = 15.40) at pretest to 85.88 (SD = 12.58) at posttest.

Effect of Animated Video-based Education

The results of the paired sample t-test are presented in Table 3. There was a statistically significant increase in mothers' skills after the intervention ($p = 0.003$). The mean difference between pretest and posttest scores was 10.00 points, indicating an improvement in early detection skills following the animated video-based education.

Table 1. Characteristics of Respondents (n=33)

| Characteristics | n (%) |
|-----------------------------------|------------|
| Maternal age | |
| Late adolescence (18–25 years) | 6 (18.2%) |
| Early adulthood (26–35 years) | 24 (72.7%) |
| Late adulthood (36–45 years) | 3 (9.1%) |
| Education | |
| Elementary and junior high school | 5 (15.2%) |
| Senior high school | 21 (63.6%) |
| College | 7 (21.2%) |
| Employment status | |
| Unemployed | 25 (75.8%) |
| Employed | 8 (24.2%) |
| Parity | |
| Primiparous | 15 (45.5%) |
| Multiparous | 18 (54.5%) |
| Family income | |
| Insufficient | 0 (0.0%) |
| Sufficient | 22 (66.7%) |
| Good | 11 (33.3%) |
| Sources of information | |
| Books | 14 (42.4%) |
| Internet | 15 (45.5%) |
| Healthcare professionals | 4 (12.1%) |

Table 2. Mean Scores of Mothers' Early Detection Skills Before and After the Intervention

| Scores | Mean | Std. Deviation | Std. Error Mean |
|----------|-------|----------------|-----------------|
| Pretest | 75.88 | 15.397 | 2.641 |
| Posttest | 85.88 | 12.581 | 2.158 |

Table 3. Paired t-test Results for Mothers' Early Detection Skills Before and After the Intervention

| Variable | Mean difference | t | df | p-value | 95% CI |
|---------------------|-----------------|--------|----|---------|--------------------|
| Pretest vs Posttest | 10.00 | -3.253 | 33 | 0.003 | -16.253 - 3.747 |

DISCUSSION

This study demonstrated that animated video-based education significantly improves mothers' skills in the early detection of child growth and development among children aged 1–5 years. The increase in mean scores from pretest to posttest indicates that this intervention effectively enhances practical skills, including measurement, recording, and interpretation of growth and developmental outcomes.

The effectiveness of animated video media can be explained by its ability to deliver information through combined visual and auditory stimuli, which enhance attention, comprehension, and retention. Previous studies have shown that audio-visual educational media are more effective than conventional methods in improving knowledge, attitudes, and health-related practices.^{12-14,17,24,25} The use of dynamic visualizations and engaging content enables learners to better understand procedural tasks, particularly those requiring demonstration, such as growth monitoring and developmental screening.

These findings are consistent with prior research indicating that animated video interventions can improve health-related behaviors, including nutritional practices, personal hygiene, and self-care practices.^{13,14,20,23} In this study, the observed improvement in mothers' skills may be attributed to the clarity of instructions, the simplicity of message delivery, and the opportunity for repeated exposure to the educational content.

From a behavioral perspective, these findings can be explained using behavior change theory, where knowledge acts as a predisposing factor influencing attitudes and practices.¹⁹ Animated video media facilitate this process by presenting information in an engaging format that promotes understanding and motivates behavioral change.

Animated video media have been widely used in health promotion programs due to their accessibility, flexibility, and effectiveness in delivering educational messages.^{15,18,21,22} Randomized trials have also demonstrated that animation-based education improves comprehension and adherence in clinical settings.^{26,27}

The findings of this study have important implications for community-based health promotion. Animated video media can be integrated into health education programs at

integrated health posts (Posyandu), maternal classes, and primary healthcare settings.

However, several limitations should be acknowledged. This study used a one-group pretest–posttest design without a control group, which limits causal inference. The sample size was relatively small and drawn from a single setting, reducing generalizability. Additionally, the short follow-up period (two days) does not allow assessment of long-term retention of skills.

CONCLUSIONS AND RECOMMENDATION

This study demonstrated that animated video-based education significantly improves mothers' skills in the early detection of growth and development in children aged 1–5 years. The intervention enhanced mothers' abilities to measure, record, and interpret growth and developmental indicators. These findings suggest that animated video media can serve as an effective educational tool for improving maternal skills in child growth monitoring, particularly in community-based health settings. Future studies are recommended to use controlled study designs, larger sample sizes, and longer follow-up periods to evaluate the sustainability of skill improvement and its impact on child health outcomes.

REFERENCES

1. Yusuf, R. N. Pengaruh Stimulasi Bermain Puzzle Terhadap Perkembangan Motorik Halus Pada Anak Balita. *Jurnal Kesehatan Medika Saintika* Vol 9, No 2 (2018), <https://doi.org/10.30633/jkms.v9i2.195>
2. Pratiwi, M. H. Pertumbuhan dan Perkembangan Anak Usia 3-6 Tahun. *Jurnal Ilmiah Kesehatan Sandi Husada*. Vol 10, No, 2, Desember 2019, pp:242-249 p-ISSN: 2354-6093 dan e-ISSN: 2654-4563, <https://doi.org/10.35816/jjikh.v10i2.162>
3. Marmi & Rahardjo, K. *Asuhan Neonatus, Bayi, Balita, dan Anak Prasekolah*. Yogyakarta : Pustaka Pelajar, 2014.
4. Nurul Abidah, S. & Novianti, H. Pengaruh Edukasi Stimulasi Tumbuh Kembang terhadap Kemampuan Deteksi Dini Tumbuh Kembang Anak Usia 0-5 Tahun oleh Orangtua. *Jurnal Ilmu Kesehatan*. Vol.14 No.2 Oktober 2020: Hal. 89-93. <https://doi.org/10.33860/jik.v14i2.132>
5. Maita, L. & Triana, A. Pengenalan KPSP dan pemeriksaan KPSP pada balita di posyandu kuntum berkait kuntum kota pekanbaru. *Community Engagem. Emerg. J.* 4, 113–116 (2023). <https://yripku.com/journal/index.php/ceej/article/view/2768>
6. Rohani, Rohani. *Media Pembelajaran*. Fakultas Ilmu Tarbiyah dan Keguruan Universitas Islam Negeri Sumatera Utara. Tahun 2019.
7. Sumarni, S., Octaviani, D. A., Widiastuti, D., Santy, Pengaruh Penggunaan Video Animasi Dalam Deteksi Dini Stunting Pada Ibu Batita. 20, 79–85 (2024). J. Link. DOI:

- <https://doi.org/10.31983/link.v20i2.12293><https://ejournal.poltekkes-smg.ac.id/ojs/index.php/link/article/view/12293>
8. Aeni, N. & Yuhandini, D. S. Pengaruh Pendidikan Kesehatan dengan Media Video dan Metode Demonst. *Jurnal Care* Vol .6, No.2, Tahun 2018 <https://doi.org/10.33366/jc.v6i2.929>. <https://jurnal.unitri.ac.id/index.php/care/article/view/929>
 9. Majid, Y. A. Edukasi tentang Stunting pada Keluarga Child Bearing Family. *Khidmah Jurnal Pengabdian kepada Masyarakat*. Volume 5, Nomor 2 Oktober 2023. DOI: <https://doi.org/10.52523/khidmah.v5i2.464>. <https://khidmah.ikestmp.ac.id/index.php/khidmah/article/view/464>
 10. Andrasari, N. A. Media Pembelajaran Video Animasi Berbasis Kinemaster Bagi Guru SD. *J. Kaji. Pendidik. Dasar* 7, 36–44 (2022). <https://prosiding.unma.ac.id/index.php/semnasfkip/article/view/781/589>.
 11. Carsel, S. Metodologi Penelitian Kesehatan dan Pendidikan. Penebar Media Pustaka. 2018.
 12. Lilis, D. N., Suryanti, Y., Fajrianti, D. & Fitria, D. W. Pengaruh Media Video Animasi Tentang Deteksi Dini Pemeriksaan Payudara Sendiri Terhadap Pengetahuan dan Perilaku WUS. *Jambura Journal of Health Sciences and Research*. Vol 4. Special Edition (2022). Hal 35–43. <https://doi.org/10.35971/jjhsr.v4i0.12476>
 13. Houston, A. J. et al. Does Animation Improve Comprehension of Risk Information in Patients with Low Health Literacy? A Randomized Trial. *HHS Public Access*. 40, 17–28 (2020). <https://doi.org/10.1177/0272989X19890296>
 14. Bond, K. T. & Ramos, S. R. Utilization of an animated electronic health video to increase knowledge of post- And pre-exposure prophylaxis for HIV among African American Women: Nationwide cross-sectional survey. *JMIR Form. Res*. Vol 3, No 2 (2019). 1–14. <https://doi.org/10.2196/formative.9995>
 15. Govender, R., Taylor, S. A., Smith, C. H. & Gardner, B. Helping patients with head and neck cancer understand dysphagia: Exploring the use of video-animation. *Am. J. Speech-Language Pathol*. 28, 697–705 (2019). https://doi.org/10.1044/2018_AJSLP-18-0184
 16. Pratiwi, T. A. & Dalimunthe, N. K. Pengaruh Edukasi “Isi Bekalku” Dengan Media Animasi Terhadap Pengetahuan, Sikap, Dan Praktik Gizi Pada Siswa Sekolah Dasar. *Prosiding Seminar Nasional Kesehatan Masyarakat UPN “Veteran” Jakarta*. Volume 4, Nomor 1 (2023). e-ISSN 3047-6461 (Media Online)
 17. Widiari, N. K. M., Budiani, N. N. & Novya Dewi, I. G. A. A. Perbedaan Perilaku Personal Hygiene Anak Prasekolah Sebelum dan Sesudah Diberikan Video Animasi di Taman Kanak-Kanak Nara Budhi Suari. *Jurnal Ilmu Kebidanan (The J. Midwifery)* 11, 105–113 (2023). <https://doi.org/10.33992/jik.v11i1.2451>
 18. Triamanda, R. Z., Salawati, T. & Larasaty, N. D. Pengembangan Konten Video Animasi Motion Graphic sebagai Media Promosi Kesehatan. 4, 40–52 (2022). <https://doi.org/10.12928/promkes.v4i1.5466>
 19. Agustien, R., Umamah, N. & Sumarno, S. Pengembangan Media Pembelajaran Video Animasi Dua Dimensi Situs Pekauman di Bondowoso dengan Model Addie Mata Pelajaran Sejarah Kelas X IPS. *Jurnal Edukasi* 5, 19 (2018). <https://doi.org/10.19184/jukasi.v5i1.8010>
 20. Awuni, N. S. & Isnri, K. Pengembangan Video Animasi Berbasis Kearifan Lokal Sebagai Media Promosi Kesehatan Manfaat Buah dan Sayur. *J. Formil (Forum Ilmiah) Kesmas Respati* 7, 169 (2022). DOI: <https://doi.org/10.35842/formil.v7i2.436>
 21. Irwan. *Etika dan Perilaku Kesehatan*. (Absolute Media, Yogyakarta, 2020).
 22. Septiyani, A. D., Utami, K. D. & Sumiyarini, R. Pengaruh Media Animasi Terhadap Praktik Cuci Tangan Pakai Sabun Pada Anak di SDN Banguntapan. *J. Indones. Sehat* 2, 117–125 (2023). DOI: <https://doi.org/10.58353/jurinse.v2i3.143> <https://jurnal.samodrailmu.org/index.php/jurinse/article/view/143>
 23. Dewi, W. E. P. & Raswati Teja, N. M. A. X. Edukasi Skrining Prakonsepsi Dengan Video Animasi Pada Wanita Usia Subur. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*. Vol 5, No 8 (2022). <https://doi.org/10.33024/jkpm.v5i8.6757>
 24. Purnama, I. A., Mustikarani, I. K. & Setia, G. adi. Pengaruh Informasi Kesehatan Dengan Media Video Animasi Terhadap Tingkat Pengetahuan Ibu dalam Pemberian Gizi Balita di Posyandu Teratai 5 Senting. *Univ. Kusuma Husada Surakarta* 75, (2020).
 25. Limidia Vidiandari, R. S. K. Pengaruh Pemberian Penyuluhan Kesehatan Melalui Video Animasi Terhadap Perilaku Sadari. *Matern. Child Heal. Care*. Vol 4, No 1 (2022). DOI: <http://dx.doi.org/10.32883/mchc.v4i1.2229>
 26. Cleeren, G., Quirynen, M., Ozcelik, O., & Teughels, W. (2014). Role of 3D animation in periodontal patient education: A randomized controlled trial. *Journal of Clinical Periodontology*, 41(1), 38–45. <https://doi.org/10.1111/jcpe.12170>.
 27. Li, J. et al. Impact of an Animation Education Program on Promoting Compliance With Active Respiratory Rehabilitation in Postsurgical Lung Cancer Patients: A Randomized Clinical Trial. *Cancer Nurs*. 44, 106–115 (2021). <https://doi.org/10.1097/NCC.0000000000000758>.