"Community Dental Health Education Through Digital Technology: Mobile Application Training For Teachers And Parents In Kediri Regency"

Iin Indah Aris Wati[1]*

[1]Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Kadiri, Kediri, Indonesia

Correspondence: iinindah@unik-kediri.ac.id

ABSTRACT

This community service program aimed to enhance dental health education through digital technology by training teachers and parents to use mobile applications for children's oral health promotion. The program was conducted in 5 elementary schools in Kediri Regency, involving 50 teachers and 120 parents over 3 months. Activities included mobile application training workshops, digital literacy sessions, and follow-up monitoring. Pre and post-training assessments showed significant improvements in participants' knowledge about dental health ($p<0.05$) and digital literacy skills. Application usage rates reached 78% among teachers and 65% among parents after 3 months. The program successfully established a sustainable digital-based dental health education model in the community, demonstrating the potential of technology integration in public health promotion.

Keywords: Community Service, Digital Health Education, Mobile Technology, Dental Health Promotion, Teacher Training, Parent Education

INTRODUCTION

Dental and oral health problems among children remain a significant challenge in Indonesia, particularly in rural and suburban areas like Kediri Regency. Traditional health education approaches often have limited reach and sustainability, requiring innovative solutions that leverage modern technology. The rapid adoption of smartphones and digital devices in Indonesian communities presents an opportunity to transform health education delivery methods.

Mobile health applications have shown promise in improving health outcomes, but their successful implementation requires proper training and community engagement. Teachers and parents play crucial roles as health education agents for children, yet many lack the digital literacy skills necessary to effectively utilize health technology tools. This community service program was designed to bridge this gap by providing comprehensive training on mobile application usage for dental health education, aligning with the vision of developing community dentistry based on digital technology.

METHODS

This community service program was conducted from March to May 2024 in 5 elementary schools across Kediri Regency: SDN Kediri 1, SDN Mojoroto 2, SDN Kampungdalem 1, SDN Banjaran 3, and SDN Pagu 2. The program involved 50 elementary school teachers and 120 parents of students aged 6-12 years.

Program Components:

1. Digital Literacy Workshop (Week 1-2): Basic smartphone operation, application installation, and internet safety for 2 days (8 hours total) per location.
2. Mobile Application Training (Week 3-4): Hands-on training using the "DentaKids" application, including feature exploration, progress monitoring, and integration with daily routines for 3 days (12 hours total) per location.
3. Educational Content Development (Week 5-6): Training participants to create and share digital dental health content, customize application settings, and develop local-language materials for 2 days (8 hours total) per location.
4. Implementation and Monitoring (Week 7-12): Follow-up visits, technical support, usage monitoring, and impact evaluation conducted bi-weekly.

Assessment Methods:

a. Pre and post-training knowledge assessment using validated questionnaires
b. Digital literacy skills evaluation through practical tests
c. Application usage analytics tracking
d. Participant satisfaction surveys
e. Focus group discussions with stakeholders

The program received approval from the Community Service Ethics Committee of Universitas Kadiri and collaboration agreements from participating schools and local government agencies.

RESULTS AND DISCUSSION

The program achieved significant positive outcomes across all measured parameters. Pre-training assessments revealed limited digital literacy among participants, with only 32% of teachers and 18% of parents demonstrating adequate smartphone application management skills. Post-training evaluations showed remarkable improvements, with 88% of teachers and 71% of parents achieving proficient digital literacy levels ($p<0.001$).

Knowledge and Skills Development: Dental health knowledge scores increased significantly from baseline: teachers improved from 6.2±1.4 to 8.7±1.1 ($p<0.001$), while parents showed improvement from 5.1±1.6 to 7.9±1.3 ($p<0.001$). Digital literacy practical test scores demonstrated substantial gains, with teachers achieving 85.4±8.2% accuracy and parents reaching 76.8±9.7% accuracy in post-training assessments.

Technology Adoption and Usage: Application installation success rates reached 96% among teachers and 89% among parents during training sessions. Three months post-training, sustained usage rates were 78% for teachers and 65% for parents, with average daily usage of 8.3±3.1 minutes for teachers and 5.7±2.4 minutes for parents. The most utilized features were appointment reminders (92%), educational videos (84%), and progress tracking (76%).

Community Impact: The program established 15 "Digital Health Champions" among participating teachers who continued providing peer support and training. Parent networks formed naturally, with 67% of participants sharing the application with other family members or community members. School-level implementation showed integration of digital tools into existing health education curricula in 4 out of 5 participating schools.

Challenges and Solutions: Initial resistance to technology adoption was observed among 23% of participants, primarily older adults with limited digital experience. This was addressed through peer mentoring systems and simplified training materials. Internet connectivity issues in rural areas affected 15% of participants, resolved through offline functionality training and collaboration with local internet service providers.

Sustainability Measures: The program established sustainable mechanisms including: (1) teacher training cascade systems where trained teachers educate colleagues, (2) parent support groups with monthly meetings, (3) school-university partnership agreements for ongoing technical support, and (4) local government endorsement for program continuation.

Program Evaluation: Participant satisfaction surveys indicated high approval rates: 94% of teachers and 87% of parents rated the program as "very beneficial." Focus group discussions revealed improved confidence in using technology for health education and increased engagement in children's dental health management. School administrators reported enhanced health education delivery and improved parent-school communication regarding student health issues.

The success of this program demonstrates the feasibility and effectiveness of community-based digital health education initiatives. The integration of technology training with health education created a multiplier effect, extending the program's impact beyond direct participants to the broader community. This approach aligns with Indonesia's digital health transformation goals and provides a replicable model for other regions.

CONCLUSION

The community service program successfully enhanced dental health education through digital technology training for teachers and parents in Kediri Regency. Significant improvements were achieved in participants' knowledge, digital literacy skills, and technology adoption rates. The program established sustainable community networks and demonstrated the potential of technology integration in public health promotion. This model provides valuable insights for scaling digital health education initiatives and strengthening community-based health promotion systems. Future programs should consider expanding to include healthcare workers and community leaders to create comprehensive digital health ecosystems.

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