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Empowerment of Cadres for Parents in Supervising Children's Use of Gadgets in Puskesmas Area in Surabaya, Indonesia

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ABSTRACT The increasing use of digital devices among elementary school children necessitates effective parental supervision, yet many parents lack adequate knowledge regarding the health implications of gadget usage. This community service initiative aimed to enhance the knowledge and capacity of health cadres and parents in supervising children's gadget use through a cascading empowerment model. The program was conducted from July 20-23 and 26, 2023, in Pacar Kembang Village, within the Pacar Keling Health Center jurisdiction, Surabaya. Participants included three faculty members, six students, 30 Surabaya Hebat cadres, and 90 parents of elementary school children. The intervention employed a two-tiered approach: faculty members initially trained health cadres through lectures and module-based instruction, after which the cadres provided direct mentoring to parents using the same educational materials. Pre-intervention assessment revealed that 76% of cadres possessed inadequate knowledge, 17% demonstrated sufficient understanding, and only 7% exhibited good knowledge levels. Similarly, baseline evaluation of parents indicated that 74% had insufficient knowledge, 13% had adequate understanding, and 13% demonstrated good comprehension. Post-intervention results showed significant improvement among cadres, with 40% achieving good knowledge levels, 37% reaching sufficient understanding, and 23% remaining in the inadequate category. This cascading empowerment model demonstrates effectiveness in building community health capacity through cadre-mediated intervention. The findings underscore the importance of continued engagement by Surabaya Hebat cadres to sustain these outcomes and establish neighborhood-based working groups that can serve as sustainable platforms for disseminating health information and promoting child health within the community.

INDEX TERMS Health Cadres Empowerment, Parental Supervision, Gadget Use In Children, Community Health Education, Cascading Training Model

I. INTRODUCTION

The proliferation of digital technology has fundamentally transformed childhood experiences, with gadgets becoming ubiquitous among elementary school-aged children. Health workers play a crucial role in delivering preventive health services to communities, particularly in optimizing the involvement of health cadres to address emerging public health challenges [1]. The widespread accessibility and affordability of smartphones and digital devices have created unprecedented exposure among school-aged children, raising significant concerns regarding their physical, mental, and social development [2], [3]. Research indicates that excessive gadget use among children is associated with multiple adverse health outcomes, including decreased physical activity, sleep disturbances, behavioral problems, impaired academic performance, and socioemotional challenges [4], [5]. While digital devices offer educational benefits when used appropriately, inadequate parental supervision and limited knowledge regarding safe usage patterns contribute to problematic device dependency in children [6], [7]. The role of parents in supervising and regulating their children's gadget use has become increasingly critical, yet many parents lack sufficient knowledge and strategies to effectively manage this aspect of child development [8], [9]. Current approaches to addressing gadget-related health concerns in children primarily focus on direct parental education and community-based health promotion strategies. Community health workers and cadres have been recognized as essential resources for achieving health equity and delivering preventive health services at the grassroots level [10], [11]. Recent evidence demonstrates the effectiveness of cascading training models, where health professionals train community cadres who subsequently provide mentoring to target populations [12], [13]. This approach capitalizes on the proximity and trust that cadres maintain within their communities, facilitating sustainable behavior change [14]. Interventions targeting parental monitoring of children's digital device use have shown promising results in improving parental awareness and implementing effective regulatory strategies [15], [16]. Educational interventions incorporating structured modules

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and practical guidance have demonstrated efficacy in enhancing parental knowledge regarding screen time management, content monitoring, and establishing healthy digital habits [17], [18]. Furthermore, community empowerment through health cadre training has proven effective in addressing various maternal and child health issues, suggesting its applicability to emerging health challenges such as gadget supervision [19], [20].

Despite growing recognition of the health implications of excessive gadget use in children and the potential of community-based interventions, significant gaps remain in the literature. First, limited research has specifically examined the effectiveness of cadre-mediated parental education programs focused on gadget supervision in Indonesian contexts, particularly in urban settings such as Surabaya [21], [22]. Second, while numerous studies document the negative consequences of unregulated device use, few have evaluated structured interventions that employ a cascading empowerment model to build sustainable community capacity for addressing this issue [23]. Third, existing research predominantly focuses on individual parent-child dyads rather than leveraging community infrastructure and existing health cadre systems to create scalable interventions [24], [25]. Finally, there is insufficient evidence regarding the knowledge levels of both health cadres and parents concerning appropriate gadget supervision strategies, which is essential for designing targeted interventions. This community service initiative aimed to enhance the knowledge and capacity of Surabaya Hebat health cadres and parents of elementary school children regarding effective supervision of children's gadget use through a cascading empowerment model implemented in the Pacar Kembang Village, within the Pacar Keling Health Center jurisdiction, Surabaya.

This study makes several significant contributions to the field of community health and child development:

1. Methodological Innovation: This initiative introduces a cascading empowerment model that leverages existing community health infrastructure, demonstrating how health cadres can serve as effective intermediaries in delivering health education to parents, thereby creating a sustainable and scalable intervention framework.
2. Evidence-Based Practice: The study provides empirical evidence regarding the baseline knowledge levels of both health cadres and parents concerning gadget supervision, establishing benchmarks for future interventions and policy development in similar urban Indonesian contexts.
3. Capacity Building: By training health cadres to deliver structured educational modules to parents, this initiative builds sustainable community capacity that extends beyond the immediate intervention period, enabling continued health promotion efforts within neighborhoods.
4. Practical Application: The development and implementation of comprehensive educational modules specifically designed for the Indonesian context provides practical tools that can be adapted and replicated in other communities facing similar challenges with children's gadget use.
5. Community Engagement: This initiative strengthens the role of Surabaya Hebat cadres as health advocates and creates pathways for establishing neighborhood-based working groups focused on child health, fostering long-term community ownership of health promotion activities.

The remainder of this article is organized as follows: Section II describes the methodology employed in this community service initiative, including participant selection, intervention design, and evaluation measures. Section III presents the results of the pre- and post-intervention assessments for both health cadres and parents. Section IV discusses the findings in relation to existing literature, addresses implementation challenges, and explores implications for practice. Finally, Section V provides conclusions and recommendations for sustaining and expanding cadre-mediated health education programs.

II. METHOD

A. STUDY DESIGN AND POPULATION SAMPLING

This community service program employed a prospective, pre-post intervention design utilizing a cascading training model to evaluate knowledge enhancement among health cadres and parents [26]. The intervention was conducted between July 20-26, 2023, in Pacar Kembang Village, within the operational jurisdiction of Pacar Keling Primary Health Center, Surabaya, Indonesia. The cascading approach was selected based on its documented effectiveness in disseminating health knowledge through community health worker networks, enabling scalable and sustainable knowledge transfer within existing health system infrastructure [27], [28]. The study population consisted of two distinct participant groups selected through purposive sampling methods. The primary participant group comprised 30 Surabaya Hebat health cadres actively serving in Pacar Kembang Village. The secondary participant group included 90 parents with elementary school-age children residing within the same geographic area. Inclusion criteria for cadres were: (1) active membership in the Surabaya Hebat cadre program, (2) willingness to participate in training and subsequent parent mentoring activities, and (3) availability throughout the intervention period. Inclusion criteria for parents were: (1) having at least one child enrolled in elementary school, (2) residing in Pacar Kembang Village, and (3) voluntary consent to participate in the mentoring program. No randomization was implemented; all eligible cadres and parents who consented were enrolled in the program. The implementation team consisted of three faculty members from health sciences disciplines and six undergraduate students who served as facilitators and data collectors.

B. INTERVENTION DESIGN AND IMPLEMENTATION

The intervention was structured as a two-tiered cascading empowerment model consisting of distinct training and mentoring phases [29]. Faculty members conducted a structured training session for health cadres in the Pacar Kembang Village meeting hall. The training employed didactic lecture methods supplemented with audiovisual presentations using Microsoft PowerPoint and liquid crystal

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display (LCD) projection technology. Instructional content focused on: (1) developmental characteristics of elementary school-age children, (2) health impacts of excessive gadget use, (3) evidence-based parental supervision strategies, and (4) effective communication techniques for parent education. Each cadre received a printed educational module entitled "The Role of Parents in Supervising Gadget Use in Children," which served as a standardized reference material for subsequent parent mentoring activities [30]. The training session incorporated interactive question-and-answer segments to ensure comprehension and address specific concerns raised by participants. Trained cadres conducted individualized mentoring sessions with parents using one-on-one teaching methods [31]. Each cadre was assigned three parents to mentor, ensuring adequate attention and personalized instruction. The mentoring sessions utilized the standardized module as the primary educational resource, covering identical content areas addressed in the cadre training phase. Cadres employed health literacy-appropriate language and culturally relevant examples to facilitate parent comprehension. Each mentoring session lasted approximately 45-60 minutes and was conducted in settings convenient for parents, including homes or community facilities.

C. DATA COLLECTION AND ANALYSIS

Knowledge assessment was conducted using a validated questionnaire adapted from existing instruments measuring parental knowledge of child technology supervision [32], [33]. The instrument consisted of 20 multiple-choice items assessing knowledge domains, including: developmental impacts of gadget use, recommended screen time guidelines, signs of problematic technology use, and effective supervision strategies. Knowledge scores were categorized into three levels: inadequate (0-60% correct responses), sufficient (61-80% correct responses), and good (81-100% correct responses). Pre-intervention assessments were administered immediately before training or mentoring sessions for both cadres and parents. Post-intervention assessments were conducted immediately following the completion of respective training or mentoring sessions. All assessments were paper-based and self-administered under the supervision of the research team to ensure completion. A comprehensive program evaluation was conducted on July 26, 2023, utilizing an electronic questionnaire distributed via the Google Forms platform [34]. The evaluation instrument assessed cadre perceptions regarding: (1) training content relevance and clarity, (2) adequacy of instructional materials, (3) confidence in conducting parent mentoring, (4) perceived effectiveness of the cascading model, and (5) recommendations for program improvement. All 30 cadres completed the evaluation survey, yielding a 100% response rate. Descriptive statistics were employed to analyze knowledge assessment data. Pre- and post-intervention knowledge scores were compared using frequency distributions and percentages for each knowledge category (inadequate, sufficient, good). Data were tabulated and analyzed using Microsoft Excel 2019. Given the descriptive nature of this community service program and the absence of a control group, inferential statistical testing was not conducted [35].

III. RESULTS

The cascading empowerment program targeting health cadres and parents regarding supervision of children's gadget use was implemented in Pacar Kembang Village, Surabaya, yielding quantifiable outcomes across multiple dimensions. This section presents the sociodemographic characteristics of participating cadres, pre- and post-intervention knowledge assessment results for both cadres and parents, and visual documentation of program implementation activities.

A. SOCIODEMOGRAPHIC CHARACTERISTICS OF HEALTH CADRES

TABLE 1
Characteristics of Surabaya Hebat cadres in community service activities

NO	Description	Frequency	Percentage (%)
1	**Education**		
	Bachelor's degree	5	16.7
	Senior High School	19	63.3
	Junior High School	6	20
	Elementary	0	0
	Total	**30**	**100**
2	**Occupation**		
	Total	26	86.6
	Occupation	2	6.7
	Housewife	2	6.7
	Total	**30**	**100**
3	**Length of time as a cadre**		
	1-2 years	6	20
	3-5 years	7	23.3
	More than 5 years	17	56.7
	Total	**30**	**100**

TABLE 1 presents the sociodemographic profile of the 30 Surabaya Hebat health cadres who participated in the training intervention. Analysis of educational attainment revealed that the majority of cadres (63.3%, n=19) had completed secondary education at the high school level, indicating a foundational educational background suitable for comprehending health education content. Regarding occupational status, the overwhelming majority of cadres (86.6%, n=26) identified as homemakers, reflecting the typical demographic composition of community health volunteer networks in Indonesia, where female household managers constitute the predominant cadre population. This occupational profile suggests substantial availability for daytime community health activities and an inherent understanding of household dynamics relevant to parenting challenges. Examination of cadre experience demonstrated that more than half of participants (56.7%, n=17) possessed extensive tenure exceeding five years in their cadre roles, indicating substantial familiarity with community health promotion activities and established relationships within their respective neighborhoods that could facilitate effective parent mentoring.

B. KNOWLEDGE ENHANCEMENT AMONG SURABAYA HEBAT HEALTH CADRES

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TABLE 2
Understanding of Surabaya Hebat cadres in community service activities

NO	Cadre Understanding	Frequency	Percentage (%)
1	**Before assistance** (Pre-Test)		
	Good	**2**	**7**
	Enough	**5**	**17**
	Less	**23**	**76**
	Total	**30**	**100**
2	**After assistance** (Post-Test)		
	Good	12	40
	Enough	11	37
	Less	7	23
	Total	**30**	**100**

TABLE 2 presents comparative pre- and post-intervention knowledge assessment results for health cadres regarding parental supervision strategies for children's gadget use. Pre-intervention assessment revealed pronounced knowledge deficits, with the vast majority of cadres (76%, n=23) demonstrating inadequate comprehension of evidence-based supervision principles, appropriate screen time guidelines, and strategies for mitigating technology-related developmental risks. A smaller proportion exhibited sufficient knowledge (17%, n=5), while only a minimal percentage (7%, n=2) possessed a good baseline understanding. Following the structured training intervention delivered by faculty members utilizing didactic lectures, audiovisual presentations, and standardized educational modules, the post-intervention assessment documented substantial knowledge improvement. The proportion of cadres achieving good knowledge levels increased markedly to 40% (n=12), representing a 33-percentage-point improvement from baseline. Similarly, those demonstrating sufficient knowledge increased to 37% (n=11), while the proportion with inadequate knowledge decreased considerably to 23% (n=7), reflecting a 53-percentage-point reduction. These findings indicate that the training intervention successfully enhanced cadre competency in this contemporary health domain, thereby establishing a foundation for effective subsequent parent mentoring activities.

C. KNOWLEDGE ENHANCEMENT AMONG PARENTS OF ELEMENTARY SCHOOL CHILDREN

TABLE 3 presents comparative pre- and post-intervention knowledge assessment results for parents who received individualized mentoring from trained health cadres. Pre-intervention evaluation revealed similarly concerning baseline knowledge deficits, with nearly three-quarters of parents (74%, n=67) demonstrating inadequate understanding of appropriate gadget supervision strategies, developmental implications of excessive screen time, and methods for establishing healthy technology use patterns in elementary school-age children. The remaining parents were approximately equally distributed between sufficient (13%, n=12) and good (13%, n=11) knowledge categories. Following the cascading intervention wherein trained cadres provided one-on-one mentoring sessions utilizing the standardized educational module, the post-intervention assessment documented substantial knowledge enhancement among the parent cohort. The proportion of parents demonstrating good knowledge increased dramatically to 66% (n=59), representing a 53-percentage-point improvement and indicating successful knowledge transfer through the cadre-mediated intervention model. Parents with sufficient knowledge increased modestly to 21% (n=19), while those with inadequate knowledge decreased markedly to 13% (n=12), reflecting a 61-percentage-point reduction. These outcomes demonstrate that health cadres, following their own capacity building, effectively functioned as community health educators capable of enhancing parental knowledge through individualized teaching methods, thereby validating the cascading empowerment model's effectiveness in extending intervention reach beyond direct training recipients.

TABLE 3
Understanding of mothers of elementary school children about supervising the use of gadgets in children

Cadre Understanding	Frequency	Percentage (%)
Before assistance (Pre-Test)		
Good	**12**	**13**
Enough	**12**	**13**
Less	**66**	**74**
Total	90	100
After assistance **(Post Test)**		
Good	59	66
Enough	11	12
Less	20	12
Total	90	100

Figures 1-4 provide photographic documentation of key program implementation activities, illustrating the practical application of the cascading empowerment model and participant engagement throughout the intervention phases. (FIGURE 1) Faculty member delivering educational content on parental supervision strategies during the parent mentoring phase. The image demonstrates the utilization of audiovisual presentation materials to facilitate knowledge transfer regarding appropriate gadget supervision methods for elementary school-age children. (FIGURE 2) Opening ceremony of the community service program featuring faculty members and student facilitators. The photograph captures the formal commencement of community empowerment activities with participating parents of elementary school children in the Pacar Kembang Village meeting facility. (FIGURE 3) The implementation team, comprising three faculty members and six undergraduate

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student facilitators, engaged in the community empowerment process. The image illustrates the collaborative approach employed in delivering individualized parent mentoring sessions utilizing standardized educational materials. (FIGURE 4) An educational module entitled "The Role of Parents in Supervising Gadget Use in Children" was utilized as the standardized instructional resource throughout both cadre training and parent mentoring phases. The module provided evidence-based content regarding developmental impacts of technology use, recommended supervision strategies, and practical implementation guidance for parents.

Figure 1

Providing material on Community empowerment by mentoring mothers with elementary school children

Figure 2

Opening of Pengabmas Lecturers and students in the process of community empowerment by assisting mothers with elementary school children

Figure 3

Pengabmas team of lecturers and students in the process of community empowerment by assisting mothers with elementary school children

Figure 4

Community Empowerment Process Module by Mentoring mothers with elementary school children

IV. DISCUSSION

The findings of this cascading empowerment program reveal substantial disparities in baseline knowledge levels among both health cadres and parents regarding the appropriate supervision of children's gadget use, alongside significant improvements following targeted interventions. Pre-intervention assessment demonstrated that 76% of health cadres possessed inadequate knowledge, with only 7% demonstrating good comprehension of parental supervision strategies for children's technology use. This pronounced knowledge deficit among frontline health workers is particularly concerning given their pivotal role as community health educators and their presumed position as trusted sources of health information within their communities [36]. The limited baseline knowledge suggests that contemporary health challenges associated with digital technology exposure have not been adequately integrated into existing cadre training curricula, representing a critical gap in community health worker competency development. Similarly, the parental cohort exhibited alarming knowledge deficits, with 74% demonstrating inadequate understanding of appropriate gadget supervision strategies prior to intervention. This finding aligns with emerging evidence indicating that many parents lack sufficient awareness of the developmental risks associated with excessive screen time and unsupervised digital media consumption among elementary school-age children [37], [38]. The parallel knowledge deficits observed across both cadres and parents underscore the urgency of systematic educational interventions addressing this contemporary public health challenge. Post-intervention results demonstrated meaningful knowledge enhancement among health cadres, with 40% achieving good knowledge levels and 37% attaining sufficient understanding following the structured training program. Although 23% of cadres remained in the inadequate knowledge category, the overall shift toward higher knowledge levels represents a substantial improvement in cadre competency. This residual knowledge gap may reflect variations in educational background, health literacy levels, or learning aptitude among cadres, suggesting that future interventions should incorporate adaptive instructional strategies to accommodate diverse learning needs [39]. The observation that parents must serve as exemplary role models in technology use [40], establish clear temporal boundaries for gadget use, curate age-appropriate applications, provide continuous supervision during technology engagement, balance digital activities with alternative recreational pursuits, and maintain their irreplaceable role as primary educators [41], [42] underscores the multifaceted nature of effective parental mediation strategies that cadres must comprehend and communicate. The documented improvement in cadre knowledge holds particular significance given the multiplicative effect inherent in cascading training models, whereby each trained cadre subsequently educates multiple community members, thereby exponentially extending intervention reach [43]. Research evidence confirms that cadres fulfill multifaceted functions, including pioneering community health initiatives, liaising with supporting institutions, implementing health programs, providing health

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coaching, and motivating community participation in health activities [44]. The enhancement of cadre capacity in this contemporary health domain, therefore, represents a strategic investment in sustainable community health infrastructure.

The effectiveness of the cascading empowerment model observed in this program demonstrates consistency with existing literature documenting the utility of train-the-trainer approaches in community health education contexts. Comparative studies implementing similar multi-tiered knowledge transfer models have reported comparable knowledge enhancement outcomes, particularly when interventions incorporate standardized educational materials and structured mentoring protocols [45], [46]. However, the magnitude of baseline knowledge deficits observed in this study appears more pronounced than those reported in previous investigations, potentially reflecting the relatively recent emergence of childhood technology supervision as a prominent public health concern and the consequent lag in integrating this topic into community health worker training programs. The finding that parental knowledge constitutes a critical determinant of children's growth and developmental outcomes resonates strongly with established developmental psychology literature emphasizing the profound influence of maternal intelligence and educational attainment on child development trajectories [47]. This intellectual capital enables mothers to provide developmentally appropriate support and create facilitative learning environments for their children. The educational process for children encompasses both environmental structuring and active learning accompaniment, necessitating conducive learning environments equipped with appropriate media, instructional tools, and play materials [48]. Technology has permeated all demographic segments, including elementary school-age children (6-12 years), who demonstrate remarkable capacity for formal learning and environmental information absorption during this developmental period [49]. The documented positive impacts of appropriately supervised gadget use, including knowledge enhancement through educational content access, social network expansion, and communication facilitation, align with findings from contemporary media effects research [50]. Evidence demonstrates that children can augment their knowledge base by accessing educational videos on platforms such as YouTube and searching for academic material using Google search engines, thereby supporting school assignment completion. Furthermore, digital platforms enable children to expand friendship networks through collaborative gaming experiences and maintain communication with geographically distant family members through messaging, voice calling, and video communication applications [51]. These beneficial outcomes, however, remain contingent upon appropriate parental mediation and supervision. Conversely, the potential negative consequences of unsupervised or excessive gadget use, including physical health deterioration, psychological disturbances, and social development impairment, underscore the critical importance of parental intervention. Parents emerge as the most influential figures in preventing or mitigating adverse effects of technology exposure, with dialogical accompaniment from parents identified as essential in reducing negative impacts [52], [53]. The parental role in technology mediation encompasses several key strategies: (1) implementing temporal limitations on device usage while gradually extending autonomy as children mature and demonstrate responsible usage patterns; (2) preventing addiction through consistent enforcement of usage rules established during early childhood; (3) facilitating adaptation to technological advancement by enabling children to develop digital literacy competencies essential for contemporary adaptive functioning; (4) promoting alternative positive activities such as physical exercise, gardening, or craft activities to diversify children's engagement; and (5) maintaining open communication channels to address difficulties and ensure children feel valued and supported [54].

This community service program possesses several methodological limitations that warrant acknowledgment. First, the absence of a control group and randomization procedures limits causal inference regarding the observed knowledge improvements. While the pre-post design enables measurement of change, alternative explanations for knowledge enhancement, such as concurrent exposure to other information sources or regression to the mean, cannot be definitively excluded. Second, the immediate post-intervention assessment protocol, while practically expedient, does not capture knowledge retention over extended time periods. Longitudinal follow-up assessments would provide more robust evidence regarding the durability of knowledge gains and the sustainability of behavior change among both cadres and parents. Third, the reliance on self-reported knowledge assessment instruments introduces potential response bias, particularly social desirability bias, wherein participants may overestimate their knowledge to present favorably. Future investigations should incorporate objective behavioral assessments or observational measures to triangulate self-report data. Fourth, the geographic restriction to a single village limits the generalizability of findings to other contexts with potentially different sociodemographic characteristics, health literacy levels, or cultural norms regarding parenting practices. Fifth, the program did not assess actual behavioral implementation of supervision strategies or measure child outcomes, thereby limiting conclusions regarding the practical application of acquired knowledge and its ultimate impact on children's technology use patterns and developmental trajectories. Despite these limitations, the program yields important practical implications for community health practice and policy. The findings demonstrate that health cadres can be effectively trained to serve as technology supervision educators, thereby extending the reach of public health interventions addressing contemporary digital health challenges. The cascading model presents a cost-effective and scalable approach to health education that leverages existing community health infrastructure without requiring substantial additional resource allocation. The identification of substantial baseline knowledge deficits among both cadres and parents highlights the necessity of integrating technology-related health topics into routine community

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health education programs and updating cadre training curricula to address emerging health determinants. Recommendations for future practice and research include: (1) implementing longitudinal follow-up assessments to evaluate knowledge retention and behavioral implementation over time; (2) incorporating child outcome measures to assess the ultimate impact of improved parental supervision on children's screen time, academic performance, and psychosocial development; (3) expanding the intervention to multiple geographic locations to enhance generalizability and enable comparative effectiveness analyses across diverse contexts; (4) developing and validating objective behavioral assessment tools to complement self-report measures; (5) establishing formal working groups within neighborhoods to institutionalize ongoing health education and peer support among parents; and (6) integrating digital technology supervision competencies into standardized cadre training curricula at the municipal or provincial level to ensure systematic capacity building across all health cadres.

V. CONCLUSION

This community service program aimed to enhance the knowledge and capacity of Surabaya Hebat health cadres and parents of elementary school children regarding appropriate supervision of children's gadget use through a cascading empowerment model implemented in Pacar Kembang Village, within the Pacar Keling Health Center jurisdiction, Surabaya. The intervention successfully demonstrated substantial knowledge enhancement across both participant cohorts, validating the effectiveness of the two-tiered cascading training approach in addressing contemporary child health challenges within existing community health infrastructure. Pre-intervention assessment revealed pronounced knowledge deficits, with 76% of health cadres demonstrating inadequate knowledge, 17% exhibiting sufficient understanding, and only 7% possessing good comprehension of parental supervision strategies for children's technology use. Similarly, parents displayed concerning baseline knowledge levels, with 74% demonstrating inadequate knowledge and 13% each in the sufficient and good categories, respectively. Following structured training delivered by faculty members and subsequent individualized mentoring conducted by trained cadres utilizing standardized educational modules, post-intervention assessment documented meaningful knowledge improvement among cadres, with 40% achieving good knowledge levels, 37% attaining sufficient understanding, and 23% remaining in the inadequate category. These findings underscore the viability of leveraging health cadre networks as effective channels for disseminating health education on emerging public health concerns, particularly those related to children's digital technology exposure and developmental well-being. To sustain and build upon the outcomes achieved through this intervention, it is strongly recommended that Surabaya Hebat cadres in Pacar Kembang Village maintain their enhanced competency through continued engagement with parents and regular review of educational materials. Furthermore, cadres should establish formalized neighborhood-based working groups that can serve as permanent platforms for ongoing health information dissemination, peer support among parents, and collective problem-solving regarding child health challenges. Future initiatives should incorporate longitudinal follow-up assessments to evaluate knowledge retention and behavioral implementation over extended time periods, expand the intervention to additional geographic locations to enhance generalizability and enable comparative effectiveness analyses, integrate child outcome measures to assess the ultimate impact of improved parental supervision on children's screen time patterns and developmental trajectories, and advocate for the systematic integration of digital technology supervision competencies into standardized cadre training curricula at municipal and provincial levels to ensure comprehensive capacity building across all community health workers in Surabaya and beyond.

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DATA AVAILABILITY

The datasets generated and analyzed during this community service program are available from the corresponding author upon reasonable request, and subject to institutional privacy.

AUTHOR CONTRIBUTION

Indriatie conceptualized and designed the community service program, developed the educational modules on parental supervision of gadget use, led the cadre training sessions, and served as the principal investigator overseeing all phases of implementation. Aida Novitasari coordinated the participant recruitment process, facilitated the cadre mentoring activities, conducted data collection and preliminary analysis, and contributed to manuscript preparation and revision. Enung Mardiyana assisted with intervention delivery, supervised the parent mentoring phase, participated in data analysis and interpretation, and provided critical input on the discussion and conclusion sections. All authors collaboratively developed

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the training materials, participated in the evaluation process, reviewed and approved the final version of the manuscript, and agreed to be accountable for all aspects of the work, ensuring its integrity and accuracy.

DECLARATIONS

ETHICAL APPROVAL

Ethical approval is not available.

CONSENT FOR PUBLICATION PARTICIPANTS

Consent for publication was obtained from all participants. Health cadres and parents were informed that de-identified aggregated data would be disseminated through academic publications and presentations, and all participants provided consent for such dissemination.

COMPETING INTERESTS

The authors declare no competing interests, financial or otherwise, related to this community service program or the publication of its findings.

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