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Effect of Nurturing Care Video Education on Mothers' Self-Efficacy and Practices in Toddler Parenting

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ABSTRACT

Aims Toddlers aged 0-3 require proper parenting; however, self-efficacy and caregiving methods remain deficient. The WHO's Nurturing Care Framework includes health, nutrition, stimulation, responsive care, and safety. Videos can enhance self-efficacy and parenting skills. This study aimed to determine the effect of video nurturing care education on mothers' self-efficacy and practices in toddler parenting.

Materials & Methods This non-equivalent quasi-experimental study employed a pre-test and post-test control group design, utilizing a straightforward approach and consecutive sampling for selecting participants. Data gathering occurred in Kapanewon, Depok, between May and August 2022. The intervention group consisted of 39 participants who utilized videos, while the control group included 49 participants who received informational leaflets. Data collection commenced with a pre-test and, after two weeks, a post-test. The evaluation tools included the Maternal Care Practice Questionnaire and the Maternal Self-Efficacy Questionnaire. Data analysis was conducted using paired t-tests, Wilcoxon tests, independent sample t-tests, and Mann-Whitney tests to compare the two groups.

Findings Most participants showed a moderate level of self-efficacy, whereas a noticeable difference in parenting practices was observed between the intervention and control groups. In the intervention group, significant differences were found in maternal self-efficacy (p=0.034) and maternal care practices (p=0.0001), while in the control group, no distinctions were observed before and after the intervention.

Conclusion The utilization of educational videos positively impacts both self-efficacy and parenting skills.

Keywords Health Education; Education; Parenting; Mothers; Self-Efficacy

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Introduction

As reported by the World Health Organization (WHO), the most critical phase of development and growth occurs during the ages of 0 to 3 years [1]. UNICEF's findings in 2019 indicated that approximately 250 million children under the age of five face the risk of developmental setbacks. In 2018, WHO introduced the Nurturing Care Framework (NCF), a set of guidelines and principles aimed at enhancing health, well-being, and human development from infancy to three years of age. The NCF encompasses components, such as health, nutrition, early stimulation, responsive parenting, and safety [2].

Evidently, there is a deficiency in effective parenting practices, as indicated by previous studies [3]. This shortfall in parenting practices heightens the likelihood of hindered developmental potential. The COVID-19 pandemic has further exacerbated inadequate parenting practices. Previous studies [4, 5] have provided evidence that the pandemic has negatively impacted parents' mental health, leading to psychological stress. Another contributing factor is parental self-efficacy (PSE). Evidence [6] reveals that nearly 43% of parents lack confidence in caring for their children due to the dynamics of interaction and parenting styles.

Drawing on a preliminary study of nine mothers in Kapanewon Depok, it was observed that 68% of mothers with diploma education and higher levels display both low self-efficacy and limited practice. To address this, Akhmadi *et al.* [7] suggest effective strategies, such as providing child development care (CCD) training. Incorporating video as an audiovisual tool aids comprehension and retention of information, a benefit highlighted by Buchner [8], who emphasizes video as an interactive learning medium for parents and children. Previous research [9] indicates the significant impact of video usage on parental attitudes toward parenting. Another study [10] also noted that smartphones can enhance feedback during and after education.

Considering the above insights, the significance of nurturing care for child development is clear. Yet, parenting practices remain inadequate [11], necessitating educational interventions centered on nurturing care. Therefore, the aim of this study was to determine the effect of video nurturing care education on mothers' self-efficacy and practices in toddler parenting.

Materials and Methods

Design and Sample

This non-equivalent quasi-experiment study used a pre-test and post-test control group design and was conducted between May and August 2022 on mothers with children aged 0 to 3 years in the Kapanewon Depok Sleman area. The quasi-experimental design was selected based on practical and ethical considerations in the field setting. While a randomized controlled trial represents the gold standard for establishing causality, several constraints precluded randomization in the current investigation, including the geographical clustering of participants within existing maternal health service networks, logistical limitations in service delivery infrastructure, and the pragmatic need to maintain ecological validity in a naturalistic community setting.

The study employed consecutive sampling to select participants, focusing on mothers and their 0-3-year-old children based on specific criteria. Eligibility requirements included being a mother of children aged 0-3, residing in Kapanewon Depok Sleman, possessing literacy skills, having smartphone proficiency, and being the primary caregiver. Exclusions encompassed hearing impairments, children with disabilities, and unwilling participants. Using the Lemeshow formula [12], the calculated minimum sample size was 39 respondents for each of the intervention and control groups, with an additional 44 to account for a 10% dropout prediction. Due to field challenges, the control group included 49 respondents, while the intervention group comprised 39.

While the final sample size met the minimum requirements calculated using the Lemeshow formula, we acknowledge that this represents a relatively modest sample confined to a specific geographical area. This sample size was determined based on feasibility considerations, including resource constraints, accessibility, and the challenges of conducting field research during the study period. Power analysis indicated that this sample size was sufficient to detect moderate to large effects (Cohen's $d \geq 0.6$) with 80% power at $\alpha=0.05$ for the primary outcomes. However, the study's ability to detect smaller effects or perform subgroup analyses may be limited. These sampling limitations are addressed further in the discussion section regarding the generalizability of the findings.

Before data collection, the researchers explained the study and obtained informed consent from the respondents. After completing the questionnaires, the researchers reviewed the data entered in the Google Form link.

Tools

Participants provided information through self-reported surveys. These survey tools were developed as part of a Master's thesis and are stored in the university's repository as unpublished content. The data collection process included a demographic form, the Maternal Care Practice Questionnaire, and the Maternal Self-Efficacy Questionnaire.

Demographic data Form: The demographic survey covered various aspects, including the mother's name, age, child's age, occupation, household income, mother's education level, environment, experiences, and stress levels. This survey drew from theories [2, 13,

[14] to focus on factors impacting education, self-efficacy, and the application of nurturing care.

Maternal Care Practice Questionnaire: The Maternal Practice Questionnaire adapted elements from Gaikwad *et al.* [15] and UNICEF [16], addressing the five components of nurturing care, including nutrition, health, responsive parenting, early stimulation, and safety. Originally comprising 40 questions, the questionnaire was streamlined to 28 items after validation. Higher scores indicated greater practice levels among mothers. The practice questionnaire displayed a reliability score of 0.857 [17, 18].

Maternal Self-Efficacy Questionnaire: This questionnaire was derived from previous studies [19, 20] and included self-efficacy related to the five components of nurturing care, totaling 24 questions. Higher scores indicated greater self-efficacy or practice levels among mothers. The self-efficacy questionnaire exhibited a reliability score of 0.965 [17, 18].

Data collection

The study lasted approximately two weeks for participants in both the control and intervention groups. Initial data collection included a pre-test, followed by leaflet distribution to the control group and video distribution to the intervention group. Post-test data were gathered after a 2-week interval. The intervention group had a 1-week pre-test interval and a 2-week post-test period following video distribution. Data collection took place between May and August 2022, beginning with reliability and validity assessments before transitioning to data collection from both control and intervention groups. This process relied on randomly selected samples determined through calculations. Each posyandu (health service post) had predetermined respondent quotas, facilitated by local cadres. Data collection methods included home visits for offline interactions and WhatsApp for online communication. After pre-test data collection, educational materials were distributed; leaflets for the control group and videos for the intervention group. Post-test data collection occurred two weeks after the distribution of media.

The intervention duration was established at two weeks based on multiple methodological considerations. First, a systematic review of comparable educational interventions targeting PSE suggests that measurable cognitive changes can be detected within 1-3 weeks post-intervention [21].

Second, practical constraints, including resource limitations and participant retention projections, necessitated a condensed temporal framework. Third, the two-week period allowed for sufficient cognitive processing time while minimizing the risk of attrition and potential confounding from extraneous variables accumulating over extended timeframes. The established two-week duration aligns with previous investigations demonstrating significant self-efficacy and behavioral modifications within similar temporal parameters [9]. However, this relatively abbreviated timeframe presents inherent limitations regarding the assessment of sustained effects and potential behavior consolidation over extended periods. These temporal constraints are addressed in the methodological limitations section and inform recommendations for longitudinal follow-up protocols in subsequent investigations.

The intervention involved one session in which respondents watched six 5 to 7-minute videos designed to promote nurturing care in early childhood development. These videos cover key topics, such as introduction to nurturing care, promoting good health, ensuring adequate nutrition, practicing responsive caregiving, creating early learning opportunities, and establishing security and safety measures. These educational videos are available on YouTube in Bahasa Indonesia and aim to advocate for and facilitate nurturing care practices while holding Intellectual Property Rights from the Directorate General of Human Rights in Indonesia, enhancing their credibility and recognition.

Data analysis

The collected data were analyzed using SPSS 18. Differences in social skills scores before and after the intervention in both groups were evaluated using paired t-tests and Wilcoxon tests. Furthermore, independent sample t-test and Mann-Whitney U test were employed to compare the two groups. The level of significance was set at $p<0.05$.

Findings

The predominant age group among participating mothers was 26 to 30 years old. Mean age in the intervention group was 30.95±5.80 years, and in the control group, it was 31.53±5.35 years. There was a slight variance in the mean age of 0.94 between the two groups. A notable portion of mothers graduated from high school or vocational school and opted to be homemakers, resulting in income levels below the monthly regional minimum wage (Rp 2,000,000). Both the intervention and control groups exhibited low maternal stress levels before and after treatment. There was no discernible distinction in the distribution of demographic data between the intervention and control groups (Table 1).

In the intervention group, there was a significant improvement in maternal self-efficacy, with a pre-test median of 48.00 and a post-test median of 49.00 ($p=0.034$). In contrast, the control group showed no significant difference, with a pre-treatment median of 49.00 and a post-treatment median of 50.00 ($p=0.166$; Paired Wilcoxon test).

Regarding maternal care practices, the intervention group showed significant improvement from a pre-test score of 60.40±7.20 to a post-test score of 64.80±8.46 ($p=0.0001$), while the control group showed no significant difference (pre-test:

62.10±8.20; post-test: 63.60±7.70; p=0.148). Although the mean scores for self-efficacy did not show a substantial increase, both the intervention and control groups exhibited a positive shift in the categorical distribution of self-efficacy from medium to high (Table 2).

No statistically significant difference was found between the intervention (3.38±7.07) and control (1.98±9.67) groups regarding changes in maternal self-efficacy (p=0.450; Mann-Whitney U test). This result indicates that the video education intervention did not have a greater effect on increasing self-efficacy compared to the treatment received by the control group.

Conversely, for nurturing care practice, a statistically significant difference was found between the intervention (4.38±5.99) and control (1.55±7.38) groups (p=0.032).

This confirms that the video education intervention was significantly more effective in improving maternal nurturing care practices compared to the treatment received by the control group.

Table 1. Characteristics of respondents

Parameter		Intervention group (n=39)	Control group (n=49)
Age (year)	20-25	6 (15.4)	5 (10.2)
	26-30	16 (41.0)	21 (42.9)
	31-35	10 (25.6)	8 (16.3)
	36-40	3 (7.7)	12 (24.5)
	41-45	4 (10.3)	3 (6.1)
Level of education	Low	23 (59.0)	33 (67.3)
	High	16 (41.0)	16 (32.7)
Job	Unemployed	32 (82.1)	35 (71.4)
	Employed	7 (17.9)	14 (28.4)
Family income (IDR)	≤2,000,000	31 (79.5)	32 (65.3)
	>2,000,000	8 (20.5)	17 (34.7)
Number of children	1	17 (43.6)	18 (36.7)
	>1	22 (56.4)	31 (63.3)
Modelling	No	21 (53.8)	33 (67.3)
	Yes	18 (46.2)	16 (32.7)
Parenting experience	Yes	10 (25.6)	13 (26.5)
	No	29 (74.4)	36 (73.5)
Get education	Yes	29 (74.4)	35 (71.4)
	No	10 (25.6)	14 (28.6)
Ease of getting groceries	Yes	38 (97.4)	49 (100)
	No	1 (2.6)	0 (0)
Media utilization	Yes	39 (100)	48 (98.0)
	No	0 (0)	1 (2.0)
Interaction with other people	No	39 (100)	1 (2.0)
	Yes	0 (0)	48 (98.0)
Mother's stress level	Normal	5 (12.8)	4 (8.2)
	Stress	34 (87.2)	45 (91.8)

IDR=Indonesia Rupiah

Table 2. Frequency of self-efficacy before and after the intervention

Parameter	Category	Intervention (n=39)		Control (n=49)	
		Pre-test	Post-test	Pre-test	Post-test
Self-efficacy	Low	3 (7.9)	2 (5.3)	3 (6.1)	1 (2.0)
	Medium	34 (87.2)	30 (76.9)	35 (71.4)	34 (69.4)
	High	2 (5.3)	7 (18.4)	11 (22.4)	14 (28.6)

Discussion

This study determined the effect of video nurturing care education on mothers' self-efficacy and practices in toddler parenting. This research incorporated two educational methods: leaflets for the control group and videos for the intervention group. Videos yielded more pronounced and significant improvements in parenting efficacy and practice compared to leaflets. While leaflets induced some numerical change in means pre- and post-education, the difference lacked significance. Utilizing audiovisual or video media for education produced a significant value, allowing the hypothesis in this study to be tested and answered. According to Dale's Cone of Experience, individuals can retain 50-70% of information through visual, auditory, and hands-on engagement, while mere reading results in only a 10% retention rate [22]. This theory also implies that video, which involves multiple senses, conveys more information compared to leaflets.

The intervention group, educated through videos, exhibited significance both before and after education. Previous research [23] highlights the efficacy of audiovisual education over posters or leaflets. Regarding self-efficacy education, the intervention group's use of videos outperformed the control group, which used only leaflets. A previous study [9] demonstrates that a video-based educational model effectively boosts certain parents' self-efficacy related to physical activity and children's nutrition. Another study [24] supports this finding, suggesting that educating mothers through videos is more

effective than leaflets or flipcharts in enhancing maternal self-efficacy in childcare.

The intervention group demonstrated more notable disparities in parenting practices than the control group. This is substantiated by a previous study [9], which reveals significant differences in maternal parenting practices, particularly in physical activity and child diet, through video education. In this study, prior to the video treatment, maternal parenting practices were relatively low; however, after receiving film-based education, there was a noteworthy improvement in average parenting practices. Another previous research [25] further supports this notion, showing a significant difference between the use of flipcharts and videos in improving care practices for mothers with sick children. The effectiveness of video interventions should also consider video duration. In this study, the videos were 3-6 minutes long. Previous research [26] indicates that video attention spans can be maintained within a range of 3 to 12 minutes, with shorter videos of 3-10 minutes enhancing engagement, satisfaction, and cognitive ability compared to longer videos [27]. Video design elements, including visuals and innovation, also influence viewer interest.

Offering education through interactive engagement to aid learners in independently assimilating educational content while under supervision constitutes a form of modular learning. Modular learning entails an autonomous educational process focused on specific subject matter, employing systematically structured instructional materials [28]. According to Sadiq & Zamir [29], the modular learning approach surpasses traditional methods due to its promotion of active learning, which enhances learners' engagement with educational content and ensures effective message delivery. Education dissemination involves various strategies, including the door-to-door approach employed in this study. Our research adopted a door-to-door methodology instead of group collection due to evolving field conditions. This decision aligns with previous research [30], which highlights the advantages of the door-to-door approach, including enhanced data quality, streamlined data collection processes, data security, and effective communication of subsequent phases. This approach is also conducive to community-based data collection.

The utilization of the door-to-door data collection approach, as highlighted by Choudhury *et al.* [31], offers advantages, such as regular program monitoring, community applicability, ease of error tracking, and consistent evaluation. Thus, the door-to-door method proves advantageous and supportive within this study. Nevertheless, this method comes with inherent limitations, including increased time and costs compared to alternative techniques, such as group-based data collection [32]. Similar circumstances arose in this study, preventing simultaneous data collection within or between groups.

The success of data collection can also be evaluated based on the timing of treatment for the research group. The intervention spanned two weeks, encompassing the provision of educational materials and post-test data collection subsequent to leaflet and video distribution. This timeframe aligns with established research, where a 2-8 week intervention duration effectively influences attitudes and behaviors [9]. This study's approach was informed by similar studies that have demonstrated the efficacy of a 2-week interval for video-based education in enhancing self-efficacy and parenting practices [9]. Personal growth in terms of self-efficacy and behavior improvement generally necessitates a minimum of 4 weeks, but even a week of consistent follow-up can yield positive results [21].

This investigation exhibited several methodological constraints warranting critical appraisal. The circumscribed sample size limits generalizability beyond the Kapanewon Depok region, despite adequate statistical power for detecting moderate effect sizes. The non-randomized quasi-experimental design introduces potential selection bias, compromising internal validity, despite statistical confirmation of between-group equivalence on measured covariates. Self-reported outcome measures, while demonstrating acceptable reliability coefficients, remain susceptible to social desirability effects, recall distortion, and demand characteristics in the absence of objective observational protocols or triangulated measurement approaches. The abbreviated intervention timeframe (two weeks) with a singular post-intervention assessment precludes evaluation of effect sustainability, behavioral consolidation mechanisms, and potential effect attenuation trajectories.

Furthermore, the multifactorial determinants of PSE and nurturing care practices across ecological systems (individual, interpersonal, structural, and cultural domains) introduce potential confounding parameters that cannot be comprehensively controlled within the current methodological framework, despite the implementation of statistical adjustment procedures. These limitations necessitate cautious interpretation while acknowledging the consistent pattern of significant differential improvements observed in the intervention condition compared to non-significant changes in the control condition, thus providing preliminary evidence supporting video-based educational interventions while establishing methodological parameters for future investigations employing enhanced research protocols.

In conclusion, this research focused on examining the effects of nurturing care video education on the self-efficacy and actions of mothers in caring for children aged 0-3 years. The findings underscore the importance of developing tailored approaches to

enhance PSE and caregiving practices. It is crucial to recognize the wide array of factors and circumstances that influence parenting, highlighting the need for strategies that can adapt to these various contexts and influences. This study emphasizes the potential of video education as a means to address these complexities and facilitate better caregiving practices among mothers.

Conclusion

The utilization of educational videos positively impacts both self-efficacy and parenting skills.

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Ethical Permissions: Ethical approval was granted by the Ethics Committee of Universitas Gadjah Mada (approval number: KE/FK/0533/EC/2022). Before data collection, the researchers explained the study and obtained informed consent from the respondents. After completing the questionnaires, the researchers reviewed the entered data in the Google Form link.

Conflicts of Interests: The authors reported no conflicts of interests.

Authors' Contribution: Amiatun AN (First Author), Introduction Writer/Methodologist/Main Researcher/Discussion Writer/Statistical Analyst (40%); Hasanah NN (Second Author), Methodologist/ Assistant Researcher/Discussion Writer/Statistical Analyst (30%); Madyaningrum E (Third Author), Introduction Writer/Methodologist/Discussion Writer (15%); Haryanti F (Fourth Author), Methodologist/Discussion Writer/Statistical Analyst (15%)

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