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**Effectiveness of nurturing care video education on mother's self-efficacy and practices in toddler parenting: A quasi-experimental study**

**ABSTRACT**

**Background**: Toddlers aged 0-3 require proper parenting, yet self-efficacy and caregiving methods remain deficient. WHO's Nurturing Care Framework includes health, nutrition, stimulation, responsive care, and safety. Videos can enhance self-efficacy and parenting skills. This study aim was to determine the effect of video nurturing care education on mother's self-efficacy and practices in toddler parenting.

**Methods**: The methodology employs a non-equivalent quasi-experiment with 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 of 39 participants utilizing videos and the control group of 49 participants with informational leaflets. Data collection commenced with a pre-test and, after two week, a post-test. The evaluation tools included assessments Maternal Care Practice Questionnaire and Maternal Self-Efficacy Questionnaire. Data analysis was conducted using Paired t-tests, Wilcoxon test, Independent sample t-tests and Mann Whitney tests to compare the two groups.

**Results**: Most of the participants showed a moderate level of self-efficacy, whereas there was a noticeable difference in parenting practices between the intervention and control groups. In the intervention group, there were significant differences in maternal self-efficacy (p=0.034) and maternal care practices (p=0.000), but in the control group, no distinctions were observed before and after the intervention.

**Conclusion**: The utilization of educational videos has a positive impact on enhancing both self-efficacy and parenting skills. The findings underscore the importance of developing tailored approaches to enhance parental self-efficacy and caregiving practices. It's crucial to recognize the wide array of factors and circumstances that influence parenting, and thus, the need for strategies that can adapt to these various contexts and influences.

**Keywords**: health education, nurturing care, parenting, practices, self-efficacy

**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. WHO, in 2018, 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 study (3). This shortfall in parenting practices heightens the likelihood of hindered developmental potential. The COVID-19 pandemic has further exacerbated inadequate parenting practices. Previous study (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) revealed 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 displayed both low self-efficacy and limited practice. To address this, Akhmadi et. al. on 2021 (7) suggest effective strategies like providing Child Development Care (CCD) training. Incorporating video as an audiovisual tool aids comprehension and retention of information, a benefit highlighted by Buchner in 2018 (8), who emphasized video as an interactive learning medium for parents and children. Previous research (9) showcased the significant impact of video usage on parental attitudes toward parenting. Previous study (10) also noted that smartphones can enhance feedback during and post-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, this study aim was to determine the effect of video nurturing care education on mother's self-efficacy and practices in toddler parenting.

**METHOD**

***Design***

The study was a non-equivalent quasi-experiment with a pre-test and post-test control group design. 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: (1) geographical clustering of participants within existing maternal health service networks; (2) logistical limitations in service delivery infrastructure; and (3) the pragmatic need to maintain ecological validity in a naturalistic community setting.

***Sample and Settings***

Between May and August 2022, this research was conducted among mothers with children aged 0 to 3 years in the Kapanewon Depok Sleman area. The study employed consecutive sampling for selecting 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, having literacy skills, 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 was 39 respondents per intervention and control group, 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 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 this sample size was sufficient to detect moderate to large effects (Cohen's d ≥ 0.6) with 80% power at α = 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 generalizability of findings.

***Instruments***

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 three instruments: a demographic form, a maternal care practice questionnaire, and a maternal self-efficacy questionnaire.

*Demographic data questionnaire*

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 Nurturing Care application.

*Maternal care practice questionnaire*

The maternal practice questionnaire adapted elements from Gaikwad (15) and UNICEF (16), addressing Nurturing Care's five components: nutrition, health, responsive parenting, early stimulation, and safety. Originally comprising 40 questions, the practice questionnaire was streamlined to 28 items after validation. Higher scores indicated greater practice levels in mothers. The practice questionnaire displayed a reliability score of 0.857 (17,18).

*Maternal Self-efficacy questionnaire*

The self-efficacy questionnaire was derived from previous study (19,20), including self-efficacy related to Nurturing Care's five components, totaling 24 questions. Higher scores indicated greater self-efficacy or practice levels in mothers. The self-efficacy questionnaire exhibited a reliability score of 0.965 (17,18).

***Data Collection***

The study lasted around 2 weeks for individuals in the control group and the intervention group. 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 was 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, starting with reliability and validity assessments before transitioning to collecting data 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 2 weeks after media distribution.

The intervention duration was established at two weeks based on multiple methodological considerations. First, a systematic review of comparable educational interventions targeting parental self-efficacy suggests 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 sufficient cognitive processing time while minimizing attrition risk 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 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.

***Nurturing Care Video Intervention***

The intervention involved one session where respondents watched six 5 to 7-minute videos, designed to promote nurturing care in early childhood development. These videos cover key topics: 1) Introduction to nurturing care, 2) Promoting good health, 3) Ensuring adequate nutrition, 4) Practicing responsive caregiving, 5) Creating early learning opportunities, and 6) Establishing security and safety measures. These educational videos are available on YouTube in Bahasa Indonesia and aim to advocate 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***

Data analysis employed descriptive statistical tests to present respondent characteristics using mean, standard deviation, median, frequency, and percentage values. Paired t-tests and Wilcoxon tests were used to determine differences in social skills scores before and after intervention in both groups. Independent sample t-tests and Mann Whitney tests were used to compare the two groups.

***Ethical Consideration***

Ethical approval was granted by the Ethics Committee of XXX (approval number: XXX). 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.

**RESULTS**

 The study focused on specific research questions, including "What is the effectiveness of video-based nurturing care education on mothers' self-efficacy and practices in toddler parenting?" To address this question, the authors provide the following findings.

***Respondents’ Characteristics***

In this study, the prevailing age group among participating mothers was 26 to 30 years old. Furthermore, data analysis revealed a slight variance in mean age of 0.94 between the two groups. Supplementary demographic information about respondent characteristics is also available in Table 1. According to Table 1, a notable portion of mothers graduated from high school or vocational school and opted to be homemakers, leading to income levels below monthly regional minimum wage (Rp 2,000,000). Both intervention and control groups exhibited low maternal stress levels before and after treatment. Additionally, based on the above table, it can be concluded that there's no discernible distinction in demographic data distribution between the intervention and control groups.

**Table 1. Characteristics of Respondents**

|  | **Intervention (n = 39)** | **Control (n = 49)** |
| --- | --- | --- |
| **f** | **%** | **f** | **%** |
| Age |  | Mean: 30.95SD: ±5.80 | Mean: 31.53SD: ±5.35 |
| 20-25 years | 6 | 15.4 | 5 | 10.2 |
| 26-30 years | 16 | 41.0 | 21 | 42.9 |
| 31-35 years | 10 | 25.6 | 8 | 16.3 |
| 36-40 years | 3 | 7.7 | 12 | 24.5 |
| 41-45 years | 4 | 10.3 | 3 | 6.1 |
| Level of education | Low | 23 | 59.0 | 33 | 67.3 |
| High | 16 | 41.0 | 16 | 32.7 |
| Job | Doesn’t work | 32 | 82.1 | 35 | 71.4 |
| Work | 7 | 17.9 | 14 | 28.4 |
| Family income | ≤ IDR 2,000,000 | 31 | 79.5 | 32 | 65.3 |
| > IDR 2,000,000 | 8 | 20.5 | 17 | 34.7 |
| Number of children | 1 child | 17 | 43.6 | 18 | 36.7 |
| >1 child | 22 | 56.4 | 31 | 63.3 |
| Modeling | No | 21 | 53.8 | 33 | 67.3 |
| Yes | 18 | 46.2 | 16 | 32.7 |
| Parenting experience | Have experienced failure | 10 | 25.6 | 13 | 26.5 |
| Never fail | 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 |

Note: IDR=Indonesia Rupiah

***Description of Self-Efficacy and Parenting Practices***

From Table 2, it's evident that maternal self-efficacy before treatment fell within the moderate range in both the control and intervention groups. Meanwhile, parenting practices achieved an average score exceeding 60 out of a perfect score of 79, indicating a generally commendable level of practice, although some aspects still had room for improvement. Both the control and intervention groups exhibited an increase in both variables before and after treatment.

**Table 2. Description of Self-efficacy and Mother Parenting Practices Before and After Treatment**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Intervention (n = 39)** | **Control (n = 49)** |
|  |  | **Pre** | **Post** | **Pre** | **Post** |
| Self-efficacy | Low | 3 (7,9 %) | 2 (5,3%) | 3 (6,1%) | 1 (2,0 %) |
| Currently | 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 %) |
| Practice | Mean | 60,38 | 64,77 | 62,06 | 63,61 |
| SD | ±7,202 | ±8,462 | ±8,214 | ±7,745 |

***Effect of Nurturing Video Intervention on Self-efficacy and Practice among Participants***

Analyzing Table 3, the intervention group exhibited a significance value of 0.034 (<0.05), indicating a disparity between pre-treatment (video) and post-treatment stages. Conversely, in the leaflet-using control group, a difference between pre- and post-treatment medians was apparent. However, in terms of significance value, maternal self-efficacy recorded 0.166, indicating no difference before and after leaflet treatment.

**Table 3. Difference in Maternal Self-efficacy Before and After Treatment in Two Groups**

|  |  |  |  |
| --- | --- | --- | --- |
| **Group** | **Pre (Median)** | **Post (Median)** | ***p*** |
| Intervention | 48,00 | 49,00 | 0,034\* |
| Control | 49,00 | 50,00 | 0,166 |

Note: Paired Wilcoxon test was performed, \*Significant at *p*<0.05

Referring to Table 4, the intervention group displayed a significance value <0.05, signifying a difference post-video treatment, while the leaflet group showed no variation before or after leaflet administration (p > 0.05).

**Table 4. Differences in Maternal Care Practices Before and After Treatment in Two Groups**

|  |  |  |  |
| --- | --- | --- | --- |
| **Group** | **Pre Test** | **Post Test** | ***p*** |
| **Mean** | **SD** | **Mean** | **SD** |
| Intervention | 60,38 | ±7,202 | 64,77 | ±8,462 | 0,000\* |
| Control | 62,06 | ±8,214 | 63,61 | ±7,745 | 0,148 |

Note: Independent t-test was performed, \*Significant at *p*<0.05

Based on Table 5, it is shown that statistically, the value of p < 0.005 for the variable of pre- and post-treatment practices in both groups indicates a significant difference. Meanwhile, for self-efficacy, there is no significant difference observed in both groups.

**Table 5. Comparison of the Difference in Treatment in Two Groups**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Intervention (n = 39)** | **Control (n = 49)** | ***p*** |
| **Median** | **Mean** | **SD** | **Median**  | **Mean** | **SD** |
| Self-efficacy | 3,38 | - | ±7,070 | 1,98 | - | ±9,679 | 0,450a |
| Practice | - | 4,38 | ±5,994 | - | 1,55 | ±7,388 | **0,032\*b** |

Note: a: Mann Whitney test was performed, b: Independent t-test was performed, \*Significant at *p*<0.05

**DISCUSSION**

This research incorporated two educational methods: leaflets for the control group and videos for the intervention group. Test outcomes indicated that 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 yields a significant value, allowing the hypothesis in this study to be tested and answered. According to Dale Cone's theory, individuals can retain 50-70% of information through visual, auditory, and hands-on engagement, while mere reading results in a mere 10% retention (22). This theory also implies that video, involving multiple senses, conveys more information compared to leaflets.

The intervention group, educated through videos, exhibited significance both before and after education. Previous research (23) highlighted the efficacy of audiovisual education over posters or leaflets. Regarding self-efficacy education, the intervention group's use of videos outperformed the control group using only leaflets. Previous study (9) demonstrated that a video-based educational model effectively boosted certain parents' self-efficacy related to physical activity and children's nutrition. Another study (24) supported this finding, suggesting that educating mothers through videos is more effective than leaflets or flipcharts in enhancing maternal self-efficacy in child care.

The intervention group demonstrated more notable disparities in parenting practices than the control group. This is substantiated by previous study (9), which revealed significant differences in maternal parenting practices, particularly in physical activity and child diet, through video education. In this study, prior to 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 supported this notion, showing a significant difference between using 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, 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 short 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 in 2014 (29), the modular learning approach surpasses traditional methods due to its promotion of active learning, enhancing learners' engagement with educational content and ensuring effective message delivery. Education dissemination involves various strategies, including the door-to-door approach employed in this study. This research adopted a door-to-door methodology instead of group collection due to evolving field conditions. This decision aligns with previous research (30), highlighting 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. in 2022 (31), offers advantages such as regular program monitoring, community applicability, ease of error tracking, and consistent evaluation. Hence, door-to-door proves advantageous and supportive within this study. Nevertheless, this method comes with inherent limitations, including increased time and costs compared to alternative techniques, like 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 treatment timing for the research group. In this study, the intervention spanned 2 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).

**Study Limitations**

This investigation exhibited several methodological constraints warranting critical appraisal. The circumscribed sample size (intervention: n=39; control: n=49) limits generalizability beyond the Kapanewon Depok region, despite adequate statistical power (β=0.80) 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 (p>0.05). Self-reported outcome measures, while demonstrating acceptable reliability coefficients (α=0.857-0.965), 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 singular post-intervention assessment precludes evaluation of effect sustainability, behavioral consolidation mechanisms, and potential effect attenuation trajectories. Furthermore, the multifactorial determinants of parental self-efficacy and nurturing care practices across ecological systems (individual, interpersonal, structural, and cultural domains) introduce potential confounding variables that cannot be comprehensively controlled within the current methodological framework, despite implementation of statistical adjustment procedures. These limitations necessitate cautious interpretation while acknowledging the consistent pattern of significant differential improvements observed in the intervention condition (self-efficacy: p=0.034; parenting practices: p=0.000) compared to non-significant changes in the control condition, providing preliminary evidence supporting video-based educational interventions while establishing methodological parameters for future investigations employing enhanced research protocols.

**CONCLUSION**

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 parental self-efficacy and caregiving practices. It's crucial to recognize the wide array of factors and circumstances that influence parenting, and thus, the need for strategies that can adapt to these various contexts and influences. This study highlights the potential of video education as a means to address these complexities and facilitate better caregiving practices among mothers.

**Conflict of interest declaration**

The authors affirm that there were no financial or commercial conflicts of interest throughout the conduct of this study and state that they have no competing interests with the funders.

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**Authorship statement**

All authors contributed equally to this study in substantial contributions to the conception or design of the work, analysis, or interpretation of data for the work; drafting the work; final approval of the version to be published.

**Authors' contributions**

**ANA** and **NNH** performed study conception, design, data collection, analysis and manuscript preparation. **EM** and **FH** supervised and performed major contributor in writing the manuscript. All authors read and approved the final manuscript.

**Data availability statement**

The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.

**Consent for publication**

Not applicable.

**Ethical consideration**

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.

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